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FOREIGN TRADE AND CALIFORNIA'S ECONOMIC GROWTH

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Foreign trade is playing an increasingly large role in the U.S. economy, and an even larger role in California's economy. Our research examines in detail the effects of expanding foreign trade on the level and composition of output (all goods and services) and employment in California. As state government has many trade-related programs directed toward improving California's economy, we also examine the implications for state policy of the rise in international trade.

Our research is based on the understanding that globalization is a complex process. Accordingly, the set of studies that we summarize here address several interrelated sets of questions:

• Is global trade a significant factor in the growth of California's economy? How does trade affect the level of employment and output? Does trade shift employment and output among industrial sectors?

• How do local firms adjust to compete in global markets? Do trade flows affect firms' location decisions? Does expanding trade change a firm's production process?

• Does trade affect the occupational distribution within industries? What is the role of trade in occupational segmentation among firm locations? Do trade flows affect the distribution of wages and employment between blue-collar and white-collar workers? Does foreign trade contribute to growing inequality in relative wages and in the demand for different types of labor?

• To what countries do California firms, as a whole, export, and why to these countries? How influential are a Pacific Rim location and an immigrant population in determining the level and direction of trade?

• Is state-government assistance desirable either to encourage trade or to deal with the impacts of trade? What are the options for policy makers?

THE AGGREGATE EFFECT OF FOREIGN TRADE ON CALIFORNIA'S ECONOMY

Global trade is of growing significance in California's economy. We estimate that for California, exports as a share of all goods and services produced in the state increased from 8% in 1987 to over 15% in 1995. In addition, trade through California's ports has risen dramatically: California accounted for 12% of total shipments through U.S. ports in 1980, but 21% by 1995.

High-tech sectors, including computers, electronics, instruments, and aircraft, account for more than 70% of merchandise exported by California producers. Agricultural products, including food products and crops, are the next largest export sector (about 9% of merchandise exports). Foreign trade is also important to some of the state's major services sectors, including motion picture production, tourism, and--directly and indirectly--software (e.g., computer programs and data processing). No data are reported on imports at the state level, but U.S. data indicate that

import competition is significant to a wide range of California industries, including computer hardware, electronic equipment, textiles and apparel, and travel.

The growth of exports in California in the past decade has been closely tied with the economic expansion of Pacific Rim countries. Asian countries, Canada, and Mexico are California's primary customers, together accounting for over two-thirds of state exports. Trade agreements, such as NAFTA and the General Agreement on Tariffs and Trade (GATT), have expanded both export opportunities for California firms and opportunities for import competition. Proposals for the Asia-Pacific Economic Cooperation Forum (APEC) could further increase trade, in both directions, with Pacific Rim countries.

In our analysis we took into account the effects of both exports and imports on California's economy, extrapolating from U.S. data when detailed information was not available for the state. Conceptually, one might expect that rising exports would help California, while rising imports would hurt the state's economy. In fact, we found a much more complex situation, affecting both manufacturing and services sectors.

On the export side, trade appears to increase output and employment for California manufacturing sectors, approximately in proportion to the share of sales accounted for by exports. On the import side, our quantitative analysis did not discover a one-to-one corresponding loss in output and jobs as imports rise as a share of domestic sales. We suggest two related explanations for this. One is the growing role of imports as inputs (ranging from raw materials to production equipment) to production in California, allowing the importing producers to expand their operations. The second is the overall growth in demand for specific goods (for example, computers) as foreign competition lowers prices overall and drives up efficiency in production, yielding an expanded market for both U.S. and foreign producers.

We also found it important to look beyond direct effects (such as jobs added to increase export activities) to indirect effects (such as the purchase of U.S.-made software by domestic users of imported computers). The computer sector is an excellent example of ways in which trade may affect services sectors both directly and indirectly. The computer-services sector has a positive trade balance and benefits directly from increased foreign sales. Foreign trade, however, is a relatively small part of computer-services revenues; indirect effects of foreign trade may produce much greater revenues for this sector. For example, the expansion of the computer hardware industry (in which trade plays a large role) has greatly increased the demand for software, such as operating systems, custom installations, and packaged programs. We estimate that at a minimum, expansion in software demand due to trade has produced enough jobs to counterbalance all of the computer manufacturing jobs lost in California between 1987 and 1995 (about 28,000) and may have expanded jobs in software by close to 80,000 during this period.

IMPACTS AT THE INDUSTRY LEVEL

While the rise in aggregate trade for California is positive, the summary picture masks transitions that occur as a result of trade. Some individual industrial sectors clearly experience job displacements as a result of trade, while other sectors see substantial shifts in the mix of their labor force. We examined two industries in detail, the computer cluster and food processing, to further understand the role of trade in economic growth in California. Our analysis drew on a number of data sources and on detailed interviews at the firm level.

California manufacturing industries can be divided into high-trade-flow and low-trade-flow sectors, depending on whether trade accounts for a large share of U.S. shipments (all products sold by U.S. companies, domestically or abroad) and domestic sales (including imports). Industries can be further divided into those with trade surpluses (exports exceed imports) and those with trade deficits (imports exceed exports). On the manufacturing end, the computer cluster represents a high-trade-flow sector with a current trade deficit, while food processing is a low-trade-flow sector with an overall trade surplus.

Both case-study industries encompass more than manufacturing activity. The computer cluster also includes computer-services activities, and food processing is closely linked to California agriculture.

Computer Cluster

For the computer sector, we found that global linkages are integral to the rate and characteristics of growth, as well as geographic location of production. Both overseas sales and imported inputs are important to this sector's growth. Although many of the computer firms are quite young, they have quickly spread production beyond California's borders. Most of the larger firms reported that their sales abroad made up between one-third and two-thirds of their total sales, with many of the products manufactured in the global market area where they are sold (e.g., Asia, Europe, North and South America). Imports play a significant role in production. Computer hardware firms estimated that 10-20% of their inputs were directly imported (as opposed to purchased from U.S. distributors, from whatever geographic source). In addition, transshipments occur within companies, with components manufactured overseas used as inputs to products assembled in California.

A firm's location characteristics vary by subsector and market position. Software firms in general had fewer production sites abroad and used fewer imported inputs compared to hardware firms. However, larger software firms were more likely to resemble computer hardware firms in production strategies, using low-cost Asian sites for duplicating disks or spreading production to several sites close to Asian and European markets. Among hardware firms, those with few competitors and customized products were less likely to have overseas production facilities. The youngest firms were also more likely to locate only in California.

Global production also influences the characteristics of a firm's California labor force. Professional, technical, and administrative staff were most likely to remain within the state, while overseas sites had primarily production and/or sales workers.

Food-Processing Industry

In contrast to the computer cluster, global linkages are much less significant in shaping California food processing. Many of the firms in this sector had been in business for 50 years or longer, and few had overseas production facilities. (Indeed, some were once multinational firms that had sold off their out-of-state operations.) In general, sales of processed foods were growing much more slowly than sales in the computer cluster.

With the exceptions of almond and citrus producers, most food-processing firms exported 10% or less of their output. Many of the food-processing firms had "niches" as high-quality producers, based on the quality and reliability of California produce. They faced relatively little competition

from producers in other nations, either in domestic or overseas markets (although some firms noted that a few overseas producers are beginning to compete in the high-end market).

Because it does not face the intense global competition found in the computer cluster, the food-processing industry is much less geographically segmented than computer manufacturing. Relatively few California food-processing firms have ventured into global markets as producers. Where they have established overseas plants, the primary motive appears to have been to process specialized products grown abroad rather than to achieve cost savings. Because California food-processing companies maintain most of their production in state, the California workforce in this industry is divided primarily between administrative and production workers, unlike the computer cluster.

These case studies demonstrate that foreign trade may have a much stronger effect on some industries than on others (depending on the importance of trade flows to the industry). For high-trade-flow sectors, trade expansion may affect both the location of production and the mix of the labor force. Trade expansion will have less of an impact on low-trade-flow industries, at least directly and in the short term.

SHIFTS IN BLUE- AND WHITE-COLLAR EMPLOYMENT AND WAGES

The case studies suggest that high-trade-flow industries whose industrial base is in California will often succeed in the global marketplace by adjusting their production process to better compete against foreign producers. Adjustments may include moving portions of production abroad and making greater use of imported inputs at home. Changes of this type are often done to reduce costs, and are likely to have implications for the occupational mix and wages of workers remaining in California. Within the computer cluster, this adjustment is apparent in the high shares of professional and technical workers in their California labor force as compared to the firms' occupational distribution worldwide.

The computer cluster is an industry that has the opportunity to be quite "footloose," and therefore may not be typical of all manufacturing industries. To more broadly understand the role of globalization in the structural change of California's manufacturing industries, we looked at one indicator of structural change, the production-worker (blue-collar) shares of wages and employment, and how they change with measures of globalization.

For manufacturing as a whole, the wage gap between blue-collar and white-collar workers has been growing, and the payroll share going to blue-collar workers has been dropping for at least a decade. Building on econometric techniques of other researchers, we estimated the role played by imported inputs in these trends. Our statistical analysis, across over 200 manufacturing sectors, shows that the increase in imported inputs accounts for 20-25% of the loss in payroll share by blue-collar workers. Industries with pre-existing low shares of blue-collar workers were particularly vulnerable to further loss of blue-collar work, while those with high initial shares were more likely to see an increase in payroll share for blue-collar workers.

EXPORTS, PACIFIC RIM LOCATION, AND IMMIGRANT NETWORKS

Both California's location and its population base contribute to the level and geographic pattern of its foreign trade. While data are not available on imports into California markets specifically, we have analyzed exports from California producers to identify the factors underlying the state's

existing trade patterns. We found that market size (gross domestic product, or GDP) is the primary determinant of California's level of exports to another country. Geographic location is another influential factor. Asian markets account for over half of California exports, compared to about 30% at the national level. Japan is California's largest single export market. Canada and Mexico are also significant export markets for the state, together accounting for about 18% of exports.

Markets and location are not the only explanatory factors, as determined by statistical analysis performed for this study. A foreign market's wealth (GDP per capita) and openness (exports and imports as a share of GDP) are also important determinants of the amount of a country's trade with California. The number of immigrants from a particular country who have settled in California is another significant factor in determining the level of exports to that country. Indeed, immigrant networks could significantly counteract the negative effects of distance in determining the level of exports from California to other countries.

Even after foreign-market characteristics, distance, and immigrant networks were taken into account, we found that California industries favor Asian nations as export destinations. One possible explanation for the high percentage of exports to Asia is the relationship between California companies and Asian producers: California firms may trade components and semifinished products back and forth with Asian firms as part of their production process.

FOREIGN TRADE AND CALIFORNIA ECONOMIC-DEVELOPMENT POLICY

Our research demonstrates the complex effects of global trade on California's economy. Foreign trade clearly affects California's economy, not only through the opportunity to export to overseas markets, but through a myriad of other mechanisms, including import competition, imported inputs, foreign direct investment by California firms, and the investment by foreign firms in economic activities in California. None of these forms of expanding global trade has a simple, unidirectional positive or negative impact. Some of the cross-flows are summarized in the table. Exports, while adding jobs and revenue to California, may also lead firms eventually to shift a portion of production abroad. Production abroad, on the other hand, may allow an industry to grow at a pace that would have been impossible under the domestic cost structure, and may also stimulate expansion of California-based support industries. Imported goods compete with California products (sometimes) but provide lower-cost items for consumption by California customers and lower-cost inputs for California producers.

Thus state policy makers, in responding to the impacts and opportunities of trade, will do so in an environment where the two are closely intertwined. Furthermore, from the firm's point of view, export and import factors are only one set of elements affecting their growth. Firms may view state programs established to address concerns over exports or imports as one part of a larger package of economic-development resources (or possibly barriers) provided by the state.

Potential Positive And Negative Effects For California of Expanding Global Interactions

Type of Global Interaction	Positive Effects	Negative Effects

Exports	Adds jobs, revenues to state businesses.	As firms widen export markets, may move production abroad.
Foreign Direct Investment by California Firms.	Adds revenues to state businesses, may add high-wage jobs, support other California firms.	May move blue-collar and even technical jobs out of California.
Import Competition	In the long term, may lead to worldwide expansion of markets.	May reduce revenue and employment for California firms.
Imported Inputs	Lower costs for California firms.	An imported input for one firm may be competition for a domestic supplier.
Foreign Investment in California	May add jobs and increase supplier business.	May be another way for foreign firms to compete in U.S. markets.

Note: The positive and negative effects suggested in this table are broad generalizations. The reality is more complex.

California's Trade-Related Programs

California's trade-related programs can be roughly divided into three types: those *related directly to foreign trade*, those that focus more broadly on *competitiveness*, and programs that are concerned primarily with *firm retention*. California's programs directly related to foreign trade are almost entirely focused on the export aspects of trade. Foreign-trade offices, trade missions, and marketing make up a large portion of state export-related activity conducted by the Trade and Commerce Agency. The state also provides information to connect California firms with export resources at the national or local level and supplies some export-finance assistance for small and medium-sized companies. In addition, the foreign-trade offices have assisted foreign firms moving into the state.

A variety of state programs address the competitiveness of California firms (whether competing in U.S. or foreign markets). Many of the programs focus on education or employment training. These include initiatives at the public school level through the state Department of Education, support of public higher education facilities, and skills-training programs through the community college system and the Employment Development Department. The state also addresses competitiveness through the California Economic Strategy Panel (created to establish statewide economic-development policy), support for the development of new technologies, and technical-assistance programs to California firms.

Finally, in part because it may be the "foreign-trade" policy of other states to encourage California firms to move or expand into their states, California has a firm-retention strategy. The core of the strategy is a program called the "Red Team" or "TeamCalifornia." This program provides targeted assistance or intervention to encourage in-state relocation or new locations for California firms considering expanding or moving out of state.

Our case-study interviews suggest that the state's competitiveness and retention programs are of far wider significance to computer and food-processing firms than programs specifically designed to promote foreign trade. Few of the large computer firms at which we interviewed

made use of the state export programs, but many were concerned with the quality of education at the primary and secondary level and with the maintenance of a strong higher education system. Computer firms were users, as well, of the California "Red Team" in their attempts to find relocation sites and to deal with permitting issues. Food-processing firms used federal rather than state export programs. The latter firms were most concerned with government regulation, especially with regard to environmental standards and interactions between agricultural/industrial facilities and expanding urban residential areas.

POLICY RECOMMENDATIONS

Many of the issues that arise from foreign trade also relate to broader economic-development issues for the state--how to retain a portion of production of existing firms as they expand, how to assist displaced workers as some work moves overseas, and how to train a labor force for growing economic sectors. The state has a base of existing programs from which these needs can be addressed, and the many different implications of expanding global linkages should be considered in setting priorities for these programs.

While the state documents the level of service provided by many of its foreign-trade and related programs, there have been no overall evaluations of their effectiveness. It is our assessment that through these programs California is well on the way to developing a set of tools that can be used within the context of trade-related changes as well as more broadly for economic-development goals. What remains is for state policy makers to develop a stronger vision of how to meet the changing needs generated by growing globalization, while also addressing other challenges facing the state's economy noted above.

Such a vision will require that policy makers adopt a multidimensional view of trade-related issues. We recommend that the following interrelated considerations guide legislative or agency action to fill in gaps and strengthen the impact of current programs.

• ***Identify needs and set priorities***. The needs created by globalization are part of a broader set of demands facing California as the economy develops. Programs to promote exports, increase the competitiveness of firms facing import competition, retain California firms, and retrain displaced workers should be developed in the context of the broader economic-development needs of the state.

• ***Recognize the complex effects of global linkages.*** Taking advantage of global linkages is not just a matter of helping California firms to expand exports and foreign firms to locate production in California. Exporters may soon become producers abroad, while foreign investors in California may soon become competitors in markets served by California firms. As the California economy transforms in response to global pressure, it should be a state goal to ensure that companies and workers have the resources and training that will enable them to prosper in the changing economy.

• ***Anticipate the effects of change and the needs of industries.*** A good understanding of the economic pressures under which industries operate and what their major concerns are should enable state and local government to anticipate and address potential issues before they become

"push" factors, leading firms to seek out-of-state sites. Overall, the state approach to expanding foreign trade, and to economic development more broadly, will be most effective if it is proactive. Careful monitoring and analysis of successful industries by state agencies could identify long-term concerns, such as capacity constraints in Silicon Valley and the search for new growing sites of expanding agricultural sectors such as wine, and allow the opportunity for strategic responses by state government alone or in partnership with other public agencies or private organizations in anticipation of these concerns.

• ***Identify and nurture new locations for expanding California industrial clusters.*** In addition to helping industries deal with expansion and congestion issues within the regions where they already concentrate, the state could work with businesses and communities to identify alternative regions within California where firms in an expanding industry could locate. For example, the expansion of a new University of California campus in the Central Valley with an emphasis on information technology could be coordinated with the expansion needs of growing high-tech businesses. (Meeting the expansion needs of one industry, however, may come into conflict with the land-use needs of a different industry, such as with agriculture in the Central Valley.)

• ***Include adjustment programs as a key element of trade policy.*** Trade clearly causes adjustments in specific industries and occupations within industries. State programs can take advantage of resources (ranging from educational institutions to facilities available at military bases) to assist firms, industry groups, and individual employees in adjusting to trade-induced changes.

• ***Develop programs in a multijurisdictional context.*** While there are many trade-related industrial needs that the state's programs do not address, there are also programs that appear duplicative, especially across government levels. The state could potentially play a stronger role in coordinating resources at different government levels and in establishing networks of agencies that can meet different trade-related needs.

• ***Include monitoring and evaluation as part of each program design.*** It is important to track the changes affecting the state as a whole (e.g., increases and decreases in export activities), the changes experienced by industries or occupational groups within the state, and the activities of different programs, and to regularly evaluate whether the programs are providing appropriate services where the need is greatest. This can be best accomplished if general trends are regularly reported by the responsible agencies and if programs are required to keep careful accounting of their activities and services.

• ***Target programs and share the costs of trade assistance.*** Overseas foreign-trade offices and missions are among the more costly economic-development programs engaged in by the state. Monitoring and evaluation are particularly important for these programs. In the absence of the information that would come from such analysis, we suggest that state resources will go further if the programs concentrate on businesses with a history of successful production for other markets and if at least a portion of the costs is recouped from successful clients assisted by state programs.

California is fortunate in having many economic-development-related resources already in place at the state level, and an economy that has shown resiliency in its ability to recover from severe structural changes. For the purposes of foreign trade, what remains is for policy makers to focus on balancing and augmenting these resources and coordinating with federal and local programs to meet the array of needs generated by increasing trade.

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This Brief is the summary of a California Policy Seminar report of the same title. The report is a condensation of the following set of seven working papers issued this spring by the Fisher Center. The working papers range in price from $5 to $10 and can be obtained from the center by phoning (510) 643-6105.

Foreign Trade and California's Economic Growth: Issues and Research Approach (Working Paper 98-257)

International Trade and California's Economy: Summary of the Data (Working Paper 98-258)

International Trade and California Employment: Some Statistical Tests (Working Paper 98-259)

The Integration of Trade into California Industry: Case Studies of the Computer Cluster and the Food Processing Industry (Working Paper 98-260)

Globalization and Labor: The Effect of Imported Inputs on Blue Collar Workers (Working Paper 98-261)

Transnational Social Networks, Transportation Costs, and the Geographic Distribution of California's Exports (Working Paper 98-262)

Foreign Trade and California's Economic Growth: A Summary of Findings and Directions for Policy (Working Paper 98-263)

Funding for this project was provided by the California Policy Seminar under its Policy Research Program. The report is available free of charge to California state government offices and for $12 to others. A check payable to UC Regents should accompany your order; credit cards are not accepted. Please address inquiries to the California Policy Seminar, 1950 Addison Street, Suite 202, Berkeley, CA 94704-1182, or telephone (510) 643-9328.

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