NBER WORKING PAPER SERIES

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Working Paper 9854
http://www.nber.org/papers/w9854

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
July 2003

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NBER Working Paper No. 9854
July 2003
JEL No. N4, N6, N9

ABSTRACT

During the Second World War, the American Pacific Coast experienced a tremendous economic boom fueled by disproportionately large flows of military spending. Even before the conflict's end, fears spread that the region's postwar economy would not provide sufficient jobs for its greatly enlarged labor force. Responsible authorities predicted one million workers— one-quarter of the labor force—would be unemployed one year after demobilization. But the conversion experience over the 1945-49 period proved far easily than anticipated, a finding which this paper attributes to strong "home market effects" highlighted in the new Economic Geography literature. Based on an empirical investigation of the long-run relationship between manufacturing production and the size of the Pacific region's market, this study finds support for the views that the region's economic structure could support multiple equilibria and that the transitory shock of military spending during World War II helped push the Pacific Coast economy from a "low-level" equilibrium to a "higher-level" equilibrium consistent with the same fundamentals.

Paul W. Rhode
Department of Economics
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-3305
and NBER
prhode@email.unc.edu

After the War Boom: Reconversion on the U.S. Pacific Coast, 1943-49[1]

One of the most dramatic changes in twentieth-century American history was the emergence of its Pacific Coast region as a core area of economic activity and innovation. Between 1900 and 1980, the share of the Far Western states (Alaska, California, Hawaii, Nevada, Oregon, and Washington) in national population more than quadrupled, rising from about 3.2 percent to almost 15.5 percent. Its share of personal income more than tripled, increasing from 5.3 percent to about 17.4 percent. By 1980, the leading urban areas of the Pacific Coast of the United States– Los Angeles, the San Francisco Bay Area, and Seattle--gained worldwide recognition as centers of high technology.

Much of the traditional historiography treats the region's experience during the Second World War as the watershed event in its twentieth-century growth. For example, Gerald Nash's influential work argued that World War Two represented a fundamental discontinuity in the West's development and that wartime supply contracts and facility investments were the driving forces in the Pacific state's rapid transformation from an stagnating economic "colony" of the industrial Northeast into a dynamic pace-setting region.[2]

There has been little or no argument that the West experienced disproportionately rapid expansion during the early 1940s. Indeed contemporary observers referred to the wartime boom as the region's "Second Gold Rush." Civilians migrated west in unprecedented numbers to fill jobs in the region's burgeoning aircraft and shipbuilding industries. In addition, military facilities in the region were home-base for thousands of soldiers and sailors engaged in the Pacific campaign. Between 1940 and 1945, the region's total population increased by 2.7 million persons, or by over one-quarter. Nor is

[1] I would like to thank participants in the Triangle Economic History Workshop, the Development of the American Economy program of the 1998 NBER Summer Institute, the Economic History Association 1998 annual meetings, and the "History Matters" conference at Stanford in June 2000 for helpful comments and constructive criticisms on earlier versions of this work. I would also like to thank the editors of the forthcoming volume *History Matters: Essays on Economic Growth, Technology, and Demographic Change* for suggestions that have led to substantial improvement in this paper.

[2] Gerald Nash, World War II and the West: Reshaping the Economy (Lincoln: Univ. of Nebraska Press, 1990).

there much disagreement that the "engine of growth" was military spending. Between June 1940 and June 1945, the Far Western states received about $27 billion in federal government spending for war supply contracts and facility investments. This accounted for close to one-eighth of the national total, roughly twice the region's pre-war share in population or manufacturing employment.

Yet there has emerged a vigorous debate about whether the Second World War represented as a fundamental discontinuity as the Nash thesis suggests.[3] Recent studies have pointed to evidence of stability in the region's political and economic structure and to the roots of the region's wartime growth in its pre-war economic development. This paper attempts to advance and, in important ways, move beyond the continuity vs. discontinuity debate by examining the Pacific Coast's economic experience in the immediate post-war period (1945-49). I argue here that the conversion process, which has been unduly neglected in the recent debate, was crucial for region's consolidation of the transitory gains during the war into permanently higher levels of economic activity.

After military spending peaked in 1943, fears spread throughout the West that the region's postwar economy would not provide sufficient jobs for its greatly enlarged labor force. Serious economic disruptions were widely foreseen. In California, responsible authorities estimated that one million workers—about one-quarter of the labor force—-would be unemployed one year after demobilization. In response to these challenges, public agencies such as the California State Reconstruction and Reemployment Commission sought to plan for orderly conversion to a peacetime economy. In addition, business groups and local officials lobbied the federal government and eastern firms to keep the West's new steel complex and other "war winnings" in operation.

The transition did not prove as difficult as most observers had anticipated. The region's unemployment rate in the immediate post-war period generally remained in single digits and the expected out-migration did not occur. Instead, the enlarged western market induced a rapid inflow of new branches of national manufacturing firms, a vigorous expansion of existing operations, and a dramatic surge in the formation of

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[3] Roger Lotchin, Fortress California, 1910-1961: From Warfare to Welfare (New York: Oxford, 1992); and the articles in "Special Issue: Fortress California at War," Pacific Historical Review 63 (Aug. 1994). For my initial take on this debate, see Paul W. Rhode, "The Nash Thesis Revisited: An Economic Historian's View," pp. 363-92, in this collection.

small-scale, local startups. Many war workers and plants shifted quickly to supply civilian markets. The demands for housing, schools, and services, left unfilled during the war, fostered vigorous job growth in construction, trade, and other services. By 1950, the Pacific Coast's employment structure had largely returned to its pre-war composition, although on a significantly larger scale.

Drawing inspiration from the New Economic Geography literature, as well as from the traditional historiography of the West, the paper argues that strong "home market effects" account for the relatively easy conversion experience on the Pacific Coast. Based on an empirical investigation of the long-run relationship between manufacturing production and the size of the region's market, this study finds surprising support for the highly speculative claims that the region's economic structure could support multiple equilibria and that the transitory shock of military spending during World War II helped push the Pacific Coast economy from a "low-level" equilibrium to a "higher-level" equilibrium consistent with the same fundamentals.

This paper has the following form: the next section briefly examines the nature and effects of the war boom on the West Coast economy. Section 3 discusses local conversion planning efforts, with a focus on wartime expectations about the post-war size of the Pacific Coast population, migration flows, employment levels, and unemployment rates. The following section details how the actual post-war experience unfolded and explores how the expansion of the home market made the transition easier than anticipated. Section 5 uses a new data set on California manufacturing to put the WWII episode into historical context by examining the long-run relationship between the growth of the region's industrial output and the size of the local market. The final section concludes.

The War Boom

There is no question that World War Two created an intense economic boom on the US Pacific Coast. As Table 1 shows, the federal government spent about $23.5 billion in major war supply contracts and $3.5 billion for military and industrial facilities in the region between June 1940 and June 1945. California led the way, receiving $19.7 billion or nearly three-quarters of the region's total expenditures.[4] The West Coast's share of national military spending, 11.8 percent, well exceeded its 1940 share of the nation's resident population, 6.5 percent, and its 1939 share of the nation's manufacturing wage-earners, 5.3 percent. But it is important to note that most of the wartime contracts were for aircraft (roughly $12 billion) and ships (about $9 billion), activities in which the region demonstrated significant comparative advantages before the attack on Pearl Harbor.[5]

The wartime boom led to a 61 percent increase in non-agricultural civilian employment on the Pacific Coast between 1940 and 1944. Table 2 offers a picture of the employment trends in the region as a whole and in its largest state, California. The expansion of the manufacturing sector drove job growth in the region. The construction and government sectors tended to keep pace with the overall expansion; most other sectors grew in absolute but not relative terms. During the war, the region's manufacturing sector added about one million workers as employment increased from 623 thousand workers in the 1939-40 period to 1,615 thousand in the 1943-44 period. This two-and-one-half fold increase in manufacturing employment accounted for over 60 percent of the overall expansion of non-agricultural employment.[6]

Driving this enormous growth in western manufacturing was the military's high demands for the products of the region's aircraft and shipbuilding industries. During the

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4 US Bureau of Census, County Data Book: 1947 (Washington, DC: GPO, 1947): 7, 77; "Industry's Leaders Outline West's Industrial Prospects," Pacific Factory (Jan. 1946): 48. California State Chamber of Commerce, Postwar Industrial Growth in California, 1945-1948, 1948-49 Series Report No. 41.

5 For this argument, see Paul W. Rhode, "The Impact of World War Two Spending on the California Economy" in R. Lotchin (ed.), The Way We Really Were: The Golden State in the Second Great War (Urbana: University of Illinois Press, 2000): 93-119.

6 Major sectors of the economy such as agriculture, construction, trade, and services grew little in absolute terms during the conflict; the labor force in finance, insurance, and real estate and in mining actually declined.

war, Pacific Coast aircraft plants produced 38 percent of the nation's planes; its shipyards built 44 percent of the government's merchant ships.[7] To meet the military's demands, employment in West Coast shipyards soared from less than 7 thousand in 1939 to over 515 thousand at the peak in the summer of 1943.[8] The number of workers in the region's aircraft plants climbed from about 25 thousand in 1939 to about 315 thousand in the summer of 1943. Together these sectors accounted for about one-half of the total expansion of non-agricultural employment in the Pacific region between 1940 and 1943. Associated with the enormous growth of these high-wage "war industries" were increases in the region's wages relative to the country as a whole. For example, the hourly wage in California manufacturing rose from 114.9 percent of the national average in the 1939-41 period to 120.7 percent in the 1943-45 period.[9]

The expansion of employment opportunities resulted in dramatic reductions in unemployment, substantial increases in labor force participation, especially of women, and significant inflows of population. The region's jobless rate, which languished at double-digit levels on the eve of the war, fell to a less than one percent by 1944. Unfortunately we lack comprehensive monthly data of the level and rate of unemployment in the Pacific Northwest during the war years, but the high-quality series available for California (displayed in Figure 1) can serve as a useful proxy for movements in the region as a whole.[10] As the Figure shows, the state's unemployment rate fell from 15.2 percent in January 1940 to 8.1 percent in December 1941, and to the

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7 Civilian Aeronautical Administration, "Aircraft, Engine, and Propeller Production, US Military Acceptances, 1940-45"; Gerald J. Fisher, A Statistical Summary of Shipbuilding under the US Maritime Commission During World War II, Historical Reports of the War Administration, US Maritime Commission, No. 2, 1949.

8 Officials at the Federal Reserve Bank of San Francisco noted: "More than any other industry, shipbuilding has been responsible for the vast increase in population and employment on the Pacific Coast since 1940, and its demand for materials and supplies has been the principal factor responsible for the rapid expansion and development of the heavy metals and metal working industries in the (12th) District." Monthly Review, (May 1944): 21.

9 California Division of Labor Statistics and Research, Handbook of California Labor Statistics, 1951-1952, (San Francisco, April 1953): 81.

10 Annual data on the unemployment rate in Washington State indicate that the unemployment rate fell from 14.7 percent in 1940 to 2.5 percent during the 1943/44 period. In the latter period, fewer than 20 thousand were unemployed. Pacific Northwest Business (Sept. 1955): 28-31. Evidence for Oregon reveal that the unemployment rate fell from 14.0 percent in March 1940 to 1.5 percent in June 1943. At the latter date, there were only 9 thousand unemployed out of a labor force of 602.5 thousand. Oregon State,

incredibly low rate of 0.3 percent in October 1943. This meant that out of a labor force of 3908 thousand workers, only 12 thousand were without jobs. The region's labor market became so tight that the war authorities declared Los Angeles, Portland-Vancouver, San Diego, San Francisco-Oakland, and Seattle-Tacoma "congested production areas" and placed restrictions on new procurement activity.[11]

Well before the market became this tight, western employers sought out new sources of labor. Migrants from the Dust Bowl, who has been unwelcome in the 1930s, were now actively recruited.[12] Housewives, students, retirees, and others discouraged from work by a decade of depression, were drawn into the labor force. These forces more than offset the region's losses due to military enlistment and conscription. According to estimates from the US Bureau of Labor Statistics, the total labor force on the Pacific Coast (including the armed forces) rose from about 4,268 thousand in April 1940 to 5,859 thousand in April 1945, an increase of 37.3 percent. This compares with a national gain of 20.5 percent. Of the 1,591 thousand added workers, natural increase accounted for only 92 thousand workers or about 6 percent; the participation of "extra workers" added 652 thousand, about 41 percent of the total. Interstate migration made up 53 percent of the increase, some 847 thousand workers. Of this number, an increase of 410 thousand would have been expected if interstate migration over the 1940-45 period maintained its 1935-40 volume. The Bureau concluded that "abnormal" migration accounted for 437 thousand added workers (or about 27 percent of the labor force growth). Most of the wartime interstate migrants came from the West North Central (32 percent), West South Central (20 percent), and Mountain (20 percent) regions, where the expansion of economic opportunities did not keep pace with the Pacific region.[13]

As a result of this surge in migration, World War Two was a period of vigorous population growth on the Pacific Coast. Between July 1940 and July 1945, the region's civilian population expanded from 9,678 thousand to nearly 11,300 thousand residents.

Eleventh Annual Report of the Unemployment Compensation Commission for the Year 1948, (Salem OR): 14.

[11] Winifred S. Wilcox, "West Coast Manpower Program," Manpower Review, 10:11 (Nov. 1943): 3-5, 24.

[12] California Division of Labor Statistics and Research, Labor in California, 1945-1946 (San Francisco, June 1947).

[13] Lester M. Pearlman, "Prospective Labor Supply on the West Coast," Monthly Labor Review (April 1947), pp. 565-66.

The total increase in the civilian population actually understates the migration flow because these figure ignore the withdrawn of the region's residents into military service. Net in-migration to the region totaled almost two million people (1984 thousand) over the 1940-45 period. At the peak, more than six hundred thousand people moved to the Pacific Coast each year.[14]

When the war ended, the region's population and labor force were significantly larger than before. In addition, millions of footloose servicemen and women awaited demobilization. But the region's industrial structure, expanded in such a rapid and unbalanced matter during the war, faced serious problems of reconversion. The leading question of the day was "Where will all these people find jobs if they stay in the West?"

Contemporary Expectations

Western business, labor, and political leaders became highly concerned about the region's post-war prospects. In part, this reflected the nationwide apprehension that the depressed conditions of the 1930s would return. But the local leaders had additional reasons to worry. The war boom had attracted so many new workers, workers without strong roots in the region, workers with a history of moving on. If jobs were unavailable in the post-war period, these migrants might either return home or, if they remained, become public charges.

In addition, the war boom had been so highly unbalanced with most of the expansion occurring in a few sectors—aircraft and shipbuilding—that were bound to contract sharply once the War was over. As local observers often noted, "reconversion" was a misnomer on the West Coast. Many of the Pacific Coast factories had not converted from peacetime production to contribute to the war effort but had been constructed as the conflict raged. When the war has over, these plants would either begin to compete in the civilian market for the first time or shut down. Adding to these concerns was the possibility that victory in Europe might precede victory in Japan by

[14] US Department of Commerce. Office of Domestic Commerce. State and Regional Market Indicators, 1939-45. Economics Series. No. 60 (Washington, DC: GPO 1947) pp. 11-12.

many months or even years and that the West Coast would remain on a war footing long after "normalcy" prevailed in the rest of the nation. Manufacturers in the East and Midwest would then be able to capture the post-war civilian markets before the western plants had a chance to convert.

The region began to prepare for peace well before the war was won. In 1943, the California legislature established the State Reconstruction and Re-employment Commission to:

> develop the natural, social, and economic resources of the State, promote development of new industries, create new markets; promote the reemployment of discharged servicemen and readjustment to displaced war workers, and the conversion of industry and commerce from war to peace standards; to provide for post-war adjustment and reconstruction, and to encourage economic and social improvement of the general public.[15]

In the Pacific Northwest, the strong regional planning staffs, set up during the New Deal, were themselves converted to plan for post-war development.[16] The staff of the 12th District Federal Reserve Bank in San Francisco also lent a hand to the conversion effort.

Up and down the coast, business, academic, and government organizations began to sample, survey, plan, and predict. Among the key issues was how large the region's post-war population and labor force be. To answer this and other questions, the planners wanted to know how many of the recent entrants into the labor market would remain and how many veterans would return. As an example, in early 1944 the Kaiser interests conducted a massive survey in the Portland area, drawing responses from over 80 thousand war workers. They found that about 52 percent of the respondents who had migrated with the previous three years intended to remain in the area after the war. Of these, about 41 percent were definite in their intention to stay and another 59 percent intended to stay if they found work. Based on this study, Emory Worth of the Oregon State Manpower Commission estimated that roughly 40 thousand in-migrant workers, representing about one-eighth of the 1944 labor force, would remain in the Portland-

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[15] US Senate, Hearings Before the Special Committee to Study and Survey Problems of Small Business Enterprises, 78th Cong., 2nd Sess., Part 42 Developing the West Through Small Business: III, Field Hearings Portland Oreg., July 28, 1944 (Washington, DC: GPO, 1944): 5335.

[16] Puget Sound Regional Planning Commission, Puget Sound Region War and Postwar Development (Washington, DC: GPO, 1943).

Vancouver area after the war.[17] Glossing the numerous surveys conducted in Washington State, Nathaniel Engle found that "about half" of incoming war workers "definitely want to remain in the State" and that between 44 and 48 percent of working women expected to drop out of the labor force after the war.[18] Adding the state's 115 thousand returning veterans, he estimated that Washington's post-war labor force would be larger by 339 thousand workers, or by 36 percent, than in 1939.

California authorities were both confident and concerned that the Golden State would keep a larger share of its recent migrants. The State Reconstruction and Reemployment Commission declared in early 1944 that "(i)n no event is the State expected to lose even temporarily more than one-quarter to one-fifth of its wartime migrants, while a net population loss by 1950 is considered highly unlikely."[19] They estimated that in "194X" – the first year after demobilization—California's population would be between 8,330 and 8,750 thousand and that in 1950 the state would likely have a population of 8,500 to 9,000 thousand.[20] O. Wheeler, director of research at the 12th District of the Federal Reserve Bank, summarized the prospects of the West as follows: "well over half of the in-migrants intend to remain in the region, at least if they can find jobs…A third or more of the former housewives apparently wish to continue working."[21]

In early 1945, authorities on the coast received more worrying news—not only did their own veterans plan to return, but unexpectedly large numbers of veterans from other states hoped to join them. The news came from a US Army study of the post-war migration plans of enlisted men conducted in the summer of 1944. Most enlisted men

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17 US Senate, Hearings Before the Special Committee to Study and Survey Problems of Small Business Enterprises, 78th Cong., 2nd Sess., Part 42 Developing the West Through Small Business: III, Field Hearings Portland Oreg., July 28, 1944 (Washington, DC: GPO, 1944): 5305-07.

18 Nathaniel Engle was the Director of the Bureau of Business Research at the University of Washington, US Senate, Hearings Before the Special Committee to Study and Survey Problems of Small Business Enterprises, 78th Cong., 2nd Sess., Part 41 Developing the West Through Small Business: II, Field Hearings Seattle, Wash., July 26 and 27, 1944 (Washington, DC: GPO, 1944): 5005-11.

19 California State Reconstruction and Reemployment Commission, How Many Californians? (Sacramento, CA: July 1944): 17-19; Estimates of Population Growth in California, 1940-1950 (Sacramento, CA: June 1944): 31.

20 California State Reconstruction and Reemployment Commission, How Much Post-War Income? (Sept 1944): 29-30; How Many Californians? (July 1944): 17-19.

21 US Senate, Hearings Before the Special Committee to Study and Survey Problems of Small Business Enterprises, 78th Cong., 2nd Sess., Part 41 Developing the West Through Small Business: III, Field Hearings Portland, Ore., July 28, 1944 (Washington, DC: GPO, 1944): 5342-43.

nation-wide (82.7 percent) stated they intended to return to the region from which they came; four-fifths said they would return to the same state. In the national sample, 10.8 percent were undecided about where to locate and 6.5 percent planned to return to a different division from their prewar residence. Of this 6.5 percent, over one-quarter stated they intended to move to the West Coast. This was a greater share of movers than any other region attracted. Reinforcing this westward flow was the fact that enlisted men from the Pacific region were more likely than those from any other region to be "homeward-bound." Nearly nine-out-of-ten intended to return to the West Coast and only 3.6 percent planned to move away. According to the authors of the study, the net effect of the movement of servicemen would be "a rapid expansion in the Pacific coast states."[22]

This news gave greater impetus to local efforts to gauge the extent of employment and unemployment during the conversion period. The conventional wisdom was that employment in the "war industries" would fall to less than one-tenth of its wartime peak. For example, a 1944 study of Pacific Coast shipyards by the Federal Reserve Bank of San Francisco indicated that the region's shipbuilders expected to have 40 thousand employees in an "ordinary year with good business" and only 16 thousand in an "ordinary year with bad business."[23] In 1943, the sector employed 515 thousand workers, implying that roughly one-half million workers would be laid off in the conversion process.[24]

In combination with the Committee for Economic Development, the Bank conducted a more comprehensive survey of Pacific Coast manufacturing firms regarding

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[22] Abram J. Jaffe and Seymour L. Wolfbein, "Postwar Migration Plans of Army Enlisted Men," Annals of the American Academy of Political and Social Science, Vol. 238 (March 1945): 18-26. The veterans were presumably more footloose than most other members of the US population. They were generally in the age categories associated with higher levels of geographic mobility, had already been detached from their family's traditional home, and had acquired federally subsidized access to housing markets and educational institutions nationwide through the 1944 Servicemen's Readjustment Bill (the GI Bill).

[23] Federal Reserve Bank of San Francisco, Monthly Review (Dec. 1944): 64. The estimates for post-war employment even under bad conditions were above the 1939 level of 6.5 thousand workers in the West Coast yards.

[24] Actually, many workers, understanding the industry's limited post-war prospects, "left early" to seek other employment opportunities. These departures and difficulties in attracting workers to the industry's dead-end jobs added to the shipbuilders' problems of completing work during the war.

their "postwar intentions" in the spring and summer of 1944.[25] They asked how much employment the firms were currently providing and how much they would offer in the postwar period under "good economic conditions" and under "bad conditions." These findings are summarized in Table 3. Overall, the region's manufacturing firms expected to employ around 780 thousand workers if times were "good" and about 500 thousand if times were "bad." The former represented an increase of about 40 percent from the actual 1939 level of employment, but a reduction by one-half from the 1943 peak. The latter figure was below even the pre-war level. Manufacturers in Oregon and Washington appeared more optimistic than those in California. The most notable sign of this difference was that the manufacturers outside of the aircraft and shipbuilding industries in the Pacific Northwest expected that under "good conditions" they would hire more workers than they did in 1943 whereas those in California expected their employment to decline.

The California State Reconstruction and Re-employment Commission painted an even more pessimistic picture of the state's post-war prospects. It estimated the civilian labor force in "194X" would be between 3,600 and 4,000 thousand workers. With "the smoothest readjustment and the highest possible levels of business activity," there would be 3,200 thousand civilian jobs within a year of demobilization, but with moderately adverse conditions, only 2,800 thousand jobs. In any case, employment would be below the 1943 peak of 3,500 thousand jobs and it would take three or four years of normal growth to recover to this level. According to a Commission report published in late 1944, unemployment in "194X" California would range between 365 and 1,200 thousand, with the most likely prospect between 450 and 800 thousand workers.[26]

As the war progressed, responsible authorities in the state became still more pessimistic about the extent of unemployment. In 1945, Samuel May, Director of the Bureau of Public Administration at the University of California, estimated that total unemployment in California at the end of the first year of demobilization (assumed in his

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[25] "Postwar Intentions of Pacific Coast Manufacturers," Federal Reserve Bank of San Francisco, Monthly Review (Feb. 1945): 17-20. As the Fed economists noted the survey covered only existing firms and, therefore, missed any increase in activity planned by potential new entrants.

[26] California Reconstruction and Re-employment Commission, How Many Jobs for Californians? (Dec. 1944): 12-15.

study to be 1946-47) would range between 905 and 1,085 thousand, levels he found "startling." The main reason for the difference from the State Reconstruction and Reemployment Commission figures was that 200 to 350 thousand veterans from other states were now expected to move to California after the war. May anticipated that the state's labor force would be higher than in 1943 by 670 thousand workers and employment lower by 315 to 490 thousand. Overall, California employment would be in the range of 2,955 to 3,130 thousand workers, implying about one-quarter of the labor force would unemployed.[27]

The Post-War Experience

What actually happened after the war? How did the experts' predictions measure up? As revealed in the data in Table 2 above, the region's readjustment proved far easier than most of the responsible authorities predicted. Contemporary observers were stuck by two phenomena: (1) overall employment recovered so rapidly–as a writer at the Federal Reserve Bank put it in mid-1946 the region experienced a loss of 45 percent of its manufacturing jobs "without collapsing or, indeed, showing any signs of distress"; and (2) the employment structure at a broad (1-digit SIC) level almost immediately returned to its pre-war composition—repeating a common refrain, a 1948 Federal Reserve article noted: "the distribution of workers among major industry groups is now not markedly different than before the war. Little trace remains of the wartime pattern of employment."[28]

As many contemporaries noted, the adjustment process began before the conflict ended with employment in the "war industries" falling gradually from 1943-44 on.

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[27] A second, later set of estimates by May's organization put the expected number of jobless Californians in mid-1946 in a range between 826 to 1256 thousand workers. These estimates were made independently by an industrial engineer, Alfred Norris, as a check on May's figures. The differences from the estimates of May and the State Reconstruction and Reemployment Commission were chiefly due to greater estimated flows of returning veterans, which resulted in higher labor force numbers (4004-4157 thousand) than the earlier studies. US Senate, Hearings Before the Special Committee to Study and Survey Problems of Small Business Enterprises, 79th Cong., 2nd Sess., Part 86 California Looks to Its Economic Future: II, Field Hearings Fresno, Calif., Feb. 25, 1946 (Washington, DC: GPO, 1946): 9828.

[28] Federal Reserve Bank of San Francisco, Monthly Review (April-May 1946): 19; (Nov. 1948): 105-06.

Nonetheless, the cutbacks after VJ-day hit the West Coast hard. In the four week period after 15 August 1945, more than 300 thousand workers lost their jobs**.** Most of the decline resulted from the termination of about 100 thousand shipyard workers (out of 385 thousand employed) and 75 thousand aircraft worker (out of an initial employment of 185 thousand). Over the next six weeks, another 100 thousand workers were laid off, again mostly in the high-paying "war industries." By the end of 1945, total employment in the region's aircraft and shipbuilding industries fell to about 280 thousand, down from 750 thousand at the start on the year.[29]

Unemployment started to climb. By February 1946, the jobless rate in California entered double-digits for the first time since 1941 (See Figure 1). But the situation quickly improved. Both the number of unemployed persons (485 thousand) and the jobless rate (11.6 percent) peaked in April 1946. By summer, the state's unemployment rate again dropped into single-digit levels and remained in the 5-8 percent range until the 1949-50 recession. I have found comparable monthly figures for unemployment rates in Oregon over the immediate post-war period (which are included in Figure 1) but unfortunately none for Washington state.[30] The available information suggests that the unemployment rate in the Pacific Northwest was slightly higher than in California in the last years of the war and was typically slightly lower in the late 1940s. Estimates of unemployment in the three Pacific Coast states from the US Employment Service indicate that the number of unemployed in the region peaked at 725 thousand in March 1946 and fell to about 600 thousand by May. The latter approximately matched the pre-war (April 1940) level when the labor force was about one-third smaller. Obviously unemployment in the conversion period was substantially higher than the wartime low of around 100 thousand (in 1943-44) and the region's unemployment rate remained several percentage points higher than the national average. But joblessness in the post-war period was far below expectations and never threatened to bankrupt the region's unemployment compensation systems as had been feared.[31]

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[29] Federal Reserve Bank of San Francisco, Monthly Review (Aug.-Sept. 1945) : 62-63; (Oct.-Nov. 1945): 77, (Jan. 1946): 1.

[30] Oregon State, Annual Reports of the Unemployment Compensation Commission, (Salem OR); Washington State Employment Security Department, Annual Reports to the Governor, (Olympia, WA).

[31] Federal Reserve Bank of San Francisco, Monthly Review (June-July 1946): 23.

One reason that unemployment was not higher was that the inflow of out-of-state veterans to the West proved to be smaller than most of the wartime studies had predicted. In 1947, the Current Population Survey estimated that about 1,301 thousand WWII-era veterans lived in the Pacific region, only about 80 thousand more than resided there prior to entry into active service.[32] The region continued to receive a positive, albeit smaller, inflow of migrants. Between July 1, 1945 and July 1, 1947, the civilian population of the Pacific Coast increased from 11,700 thousand to 13,551 thousand. Of this increase, migration accounted for about 342 thousand. The post-war surge in family formation caused the rates of natural increase in the Far West to reach unprecedented levels. The surplus of births over deaths accounts for over four-fifths of the region's population growth.

Overall, non-agricultural employment in the three Pacific Coast states fell by 290 thousand workers, or about 7 percent, between 1944 and 1946. But the 1946 level was still 50 percent above the 1940 level. Most of the decline appears to be due to the voluntary withdrawal of the "extra workers"—housewives, students, and retirees—from the labor market. The decline, moreover, was only temporary. By 1950, non-agricultural employment in the region surpassed even the wartime peak.

How could the Pacific Coast's economy sustain its greatly enlarged labor force and population after the war? It is useful to frame the issue in a simple demand and supply model of the labor market. During the Second World War, the Pacific Coast experienced a dramatic shift out in labor demand in its "war industries", which led to the expansion of its labor force. After 1943, the military demands began to diminish, but employment did not fall as much as predicted. Why did the wartime reallocation of aggregate income and employment "stick"? There are several possible explanations and I would not like to fall into the trap of insisting that only one is valid.[33]

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[32] US Census Bureau, Estimated Number of Veterans of World War II In Continental United States by States, April 1, 1947 Current Population Survey, P25, No.5. Note that given the large migration flows of the early 1940s, many of those entering the service in the Pacific states had resided in other regions at the time of the 1940 Census.

[33] Neither 1939-40 nor 1943-44 were periods sustaining long-run full-employment equilibrium in the labor market. The 1939 economy was arguably operating at far less than full capacity due to deficient aggregate demand. Perhaps the best indication of the accuracy of this characterization is how rapidly output increased and unemployment fell once the wartime demand kicked in. Another interesting sign about the state of the pre-war labor markets is how they responded to the increases in military demands, which were

One possible explanation is that the wartime stimulus did not really end. The emergence and growth of the military-industrial complex during the Cold War period is a familiar theme in the economic history of the recent past. It is well understood that over the second half of the twentieth century, military procurement became geographically concentrated in the so-called "Gun-Belt" along the Atlantic, Gulf, and Pacific Coasts.[34] That said, it is important to note that military spending declined sharply after World War II as Figure 2 displays. By 1945, real expenditures for defense expenditures reached the unprecedented and, indeed, probably unsustainable sum of $139 billion (in 1958 dollars). Between 1945 and 1948, US military spending contracted by $127.6 billion or 92 percent. (By way of contrast, the post-Cold War defense contraction from 1989 to 1996 was only 29 percent; even in absolute terms, the recent drop of $20.9 billion was dwarfed by the 1945-48 decline.) While data on the regional allocation of defense spending for the 1946-50 period are not readily available, it is absolutely certain than spending in the Pacific region was far lower than at the wartime peak.

A reading of the West Coast business press in the immediate post-war period reveals that virtually no one considered military spending a suitable permanent foundation for the region's economy. While there were expressions of concern that the post-war contraction was too rapid, most business writers placed their faith in the private sector. To the extent that the local business community demanded government intervention, it was to combat freight rate discrimination, to help establish western basing points for steel prices, and to sell off war surplus facilities in an orderly manner. Nothing in the experience of West's business leaders suggested that the region's long-term economic growth could be based on military sales and few realized that defense demand would remain permanently higher until the beginning of the Korean conflict.

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primarily for durable manufactured goods. The so-called war industries typically saw large increases in employment but smaller relative increases in wages than the so-called non-war industries. The existence of a pool of underemployed labor (particularly in the rural areas on the West Central region) during the pre-war period also helps explain the high degree of responsiveness of migrants to the job opportunities opening on the Pacific Coast during the war. The 1943-44 peak was not the ideal candidate for a period of long-run equilibrium either. By this point, the War Labor Board imposed restrictions on how high wages could be increased. Even earlier, plant allocation decisions and materials controls led to the contraction of activity in many activities.

[34] As late as 1996, the Pacific region received 21.6 percent of the DOD Contract Awards and 21.6 percent of military payrolls, which was disproportionately larger than its share on national economic activity.

Between 1945 and 1947, the region's aircraft industry suffered a severe contraction but soon activity stabilized at a level far above pre-war production. By 1948, the Pacific Coast industry was already in the black, owing to a resumption of military orders and successful reconversion of a part of the industry to civilian production. One important trend accompanying the post-war contraction of the aircraft industry was its re-concentration on the West Coast. A glimpse of this process is offered in Table 4, which shows the floor-space of airframe place in 1940, 1944, and 1948. Before Pearl Harbor roughly one-half of the floor-space was on the West Coast. During the War, the military authorities induced the leading West Coast firms to build and operate large plants in the mid-continent region. Although the share of national aircraft floor-space (and production) located on the West Coast fell to about one-quarter, the share "managed" by West Coast firms remained roughly constant. After the war, the West Coast firms shut down almost all of their mid-continent branch plants and the West Coast share climbed back to about one-half of the national total.

By way of contrast to the aircraft industry, Pacific Coast shipbuilding virtually collapsed after VJ day (see Figure 3). By early 1947, the region's private and navy yards split evenly the sector's labor force of 65 thousand workers. For several years after mid-1947, industry received no orders for new ships and performed only repair work. By early 1950, employment had fallen to about 32 thousand. Although the industry recovered slightly during the Korean conflict, Pacific Coast shipyard activity never again approached one-tenth of the 1943-44 levels.[35] In summary, military demand in the immediate post-war period, while higher than before the war, was far below the wartime peak.

A second alternative explanation for the continued high employment level is that migration is costly. Once people had made the investment to move west in response to the wartime boom, they would not automatically move back home when the boom ended. The elasticity of labor supply in response to the expansion of demand was higher than that in response to the contraction, implying the temporary boom had a ratchet effect on

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Statistical Abstract of the United States: 1997, Table No. 550. Also see Ann Markusen, et al., The Rise of the Gunbelt: the Military Remapping of Industrial America (New York : Oxford University Press, 1991).

[35] Federal Reserve Bank of San Francisco, Monthly Review (Feb. 1949): 20; US Bureau of Labor Statistics, Employment and Payrolls (various months) and Monthly Labor Review (May 1944) pp. 951-52.

the region's labor force. This argument has some plausibility. But in combination with a decline in labor demand in the "war industries," it implies that relative wages would have to fall dramatically to sustain employment. The available evidence suggests regional wages did decline, but the movements were surprisingly mild. In California, for example, the hourly manufacturing wage fell from 120.7 of the national average in the 1943-45 period to 114.0 in the 1947-49 period. The latter figure was 0.8 percentage points below the ratio prevailing in the 1939-41 period. Given the conventional estimates of own-price elasticity of demand for labor (say –0.75), this change would account for only a trivial fraction of the relative increase in the state's employment, holding the labor demand constant.[36]

The complete explanation must then include an increase in relative labor demand from a source other than the military. It could be due to an increase in demand for the region's exports, which included principally agricultural and wood products and nonferrous metals. But between 1943 and 1946, aggregate employment in these activities actually declined in both California and the Pacific Northwest.

The second and more promising candidate for an expansion of demand was the region's home market. The wartime boom had increased the real income on the Pacific Coast by almost 77 percent between 1940 and 1945. The region's share of national income rose from 9.7 percent to 11.9 percent and its share of national population rose from 7.4 percent to 8.9 percent.[37] But the wartime controls and labor market conditions slowed economic adjustments to meet the enlarged civilian demands.

The robust growth of the national economy in the immediate post-war period is commonly attributed to pent-up demand, to the combination of large levels of private savings built up during the war and of small existing stocks of consumer durables and housing following a decade-and-a-half of limited purchases. By most measures, pent-up demand on the West Coast was especially intense. During the early 1940s, the region's per capita income became the highest in the nation, contributing to the rapid accumulation of liquid assets. For example, per capita sales of war bonds on the Pacific

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36 The labor demand estimate is from Ronald G. Ehrenberg and Robert S. Smith, Modern Labor Economics: Theory and Public Policy 4th Ed. (New York: Harper Collins, 1991) p. 117

37 US Department of Commerce, Office of Domestic Commerce, State and Regional Market Indicators, 1939-45, Economics Series. No. 60 (Washington, DC: GPO 1947): 11-13.

Coast were consistently 25-30 percent higher than the national average. Between 1941 and 1945, the region's residents purchased over $4.5 billion Series E Savings Bonds, accounting for about 11.6 percent of national sales. Other forms of liquid savings also rose dramatically over the war. Between the end of 1939 and the end of 1945, bank deposits on the Pacific Coast rose from $5.2 billion (7.6 percent of the national total) to $17.0 billion (10.3 percent).[38] When this spending power was released, a tremendous boom resulted.[39]

Despite the huge flows of migrants, civilian construction virtually stopped on the West Coast in the war years. By 1943-44, acute housing shortages appeared in most of the leading urban centers. Indeed, as authorities noted, the question of where the enlarged population would find homes in the post-war West was second only to the question of where they would find jobs. When construction controls were lifted after mid-1945, the region enjoyed an extremely vigorous residential construction boom. Table 5 displays the real value of authorized construction in urban areas on the Pacific Coast from 1943 to 1950. As it shows, real construction spending in 1947-48 as roughly three times the 1943-44 level. And as Table 2 reveals, over the 1944-48 period, the building

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[38] US Department of Commerce, Office of Domestic Commerce, State, Regional, and Local Market Indicators, 1939-46, Economics Series. No. 67 (Washington, DC: GPO 1948): 36-38.

[39] The recent work of Robert Higgs serves as a useful corrective to the view that the consumption boom was literally based on dissaving, on spending down savings accumulated during the war. See Robert Higgs, "From Central Planning to the Market: The American Transition, 1945-1947." Journal of Economic History 59(3), (Sept. 1999): 600-623. As Higgs noted, the aggregate national saving rate during the conversion period (1946-47) always remained positive, even if lower than during the war. But to my mind, this does not entirely refute the conventional wisdom that wartime savings helped fuel the post-war boom. In 1939, the typical US household presumably possessed stocks of liquid assets, consumer durables, and residential capital far below their equilibrium levels due to the previous decade of depressed incomes and financial collapse. With the wartime combination of rising earnings, production controls, and rationing of consumer goods, their stocks of liquid assets recovered much faster than their stocks of consumer durables and housing. In the absence of this accumulation of liquid assets, households presumably would have saved more and spent less in 1946 than they did. We know many households did dissave during the conversion period; according the Federal Reserve Board study "more than two-fifths" of US families reported decreases in liquid assets in 1946. (US Council of Economic Advisors, Midyear Economic Report of the President, July 21, 1947 (Washington, DC: GPO, 1947) p. 18.) More probably would have done so but for the gray markets limiting the availability of automobiles and other consumer durables.

Overall, Higgs has a negative assessment of the war's effects on economic activity. See Robert Higgs, "Wartime Prosperity? A Reassessment of the U.S. Economy in the 1940s," Journal of Economic History 52(1), (March 1992): 41-60. It is beyond the scope of this paper to evaluate the validity of this perspective at the national level, but I will note the underlying conception framework appears to exclude scale effects highlighted in the new literatures on economic growth and geography. Such scale effects create the possibility that the wartime stimulus push a regional economy to a new equilibrium.

sector added 92 thousand employees in the Pacific region as a whole, almost all in California.

Even larger and more immediate changes occurred in the trade and service sectors. These activities had not kept pace with the expansion during the war. Indeed, many small retail and wholesale establishments closed because of materials and labor shortages. For example, in California the number of retail stores licensed by the state (to collect sales taxes) declined from 250 thousand in 1940 to under 174 thousand in 1943. After the war peak, the number bounced back, increasing to 251 thousand in 1946 to 278 thousand in 1948.[40] In Washington State, it was reported that 1500 trade establishments per month were started in the late 1945 and early 1946. Again referring to Table 2, the West Coast trade sector added nearly 238 thousand jobs between 1944 and 1948 and the service sector (including Finance, Insurance, and Real Estate) nearly 138 thousand. The bulk of these increases occurred in California where employment in the trade expanded by 177 thousand and that in services by 108 thousand.[41]

Finally although employment in the manufacturing sector fell sharply in 1945-46, almost all of the contraction was in shipbuilding and aircraft. Many of the other so-called "war industries" such as chemicals, petroleum, rubber tires, and automobiles recovered quickly after their initial cutbacks. And the growth in the "non-war industries" offset the decline in the "war industries" to a far greater extent than was expected. Table 6 presents data on the number of production workers on the Pacific Coast by major industry group for 1939, 1947, and 1950. As it shows, even excluding aircraft and shipbuilding, manufacturing employment on the West Coast increased by almost 70 percent between 1939 and 1947. The industrial groups typically associated with larger scale (SIC 28-30, 33-38) generally experienced faster growth.

Most contemporaries placed special emphasis on the growth of large-scale basic industries. Indeed, the establishment of the West's first modern integrated steel plants at Fontana, CA and Geneva, UT were widely considered the region's major "war winnings." But it is important to observe how broadly based the expansion was. Jane Jacobs' classic analysis of the "import replacement" process in post-war Los Angeles

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[40] California Department of Employment, Proceedings of the Governor's Conference on Unemployment (Sacramento, CA: 1949) p. 294.

highlights the vital role that the diverse array of small and medium-size startup firms played in the region's reconversion:

> ….new enterprises started in corners of old loft buildings, in Quonset huts and in backyard garages. But they multiplied swiftly, mostly by the breakaway method. And many grew swiftly. They poured forth furnaces, sliding doors, mechanical saws, shoes, bathing suits, underwear, china, furniture, cameras, hand tools, hospital equipment, scientific instruments, engineering services and hundred of other things. One-eighth of all the new business started in the United States during the latter half of the 1940s were started in Los Angeles.[42]

My examination of the federal government figures suggests the latter statistic is somewhat exaggerated. Nonetheless, the surge in business formation on the Pacific Coast during the immediate post-WWII period was highly impressive, as the evidence in Tables 7 and 8 reveal. Table 7 presents statistics, constructed by the US Office of Business Economics based on the payroll tax records of the Bureau of Old-Age and Survivors Insurance, on the population and composition on business firms in operation. Table 8 adds information on the number and rates of new entries, exits, and transfers over the 1945-50 period for the Pacific Coast, California, and the United States as a whole. The data on the aggregate number of firms show that the business population on the Pacific Coast increased by almost one-half between 1945 and 1950 compared with a rise by one-third nationally. The Far West's expansion was both deep and wide; in every sector, the proportional increase was greater on the Pacific Coast than in the nation as a whole. The growth of the number of western firms was most rapid in contract construction (2.56 times), followed by wholesale trade (1.67), manufacturing (1.46) and retail trade (1.44), service (1.36), and all other industries (1.19). Indeed, the Office of Business Economics study indicates that the rate of new business entry in the West outpaced that in every other region of the country. And while it appears that Jacobs' statement that Los Angeles accounted for one-eighth of the nation's startups is off, the Pacific Coast as a whole exceeded this share. Most of these new firms obviously started small, and many "failed." (Rates of exits and business transfers on the Pacific Coast were also substantially higher than the national averages, and whereas entry rates

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[41] Handbook of California Labor Statistics, 1951-1952, pp. 18-20.

[42] Jane Jacobs, The Economy of Cities (New York: Random House, 1969): 152-53.

generally declined over the late 1940s, exit rates rose.)[43] Finally, it is important to note that, as the recent New Economic Growth literature serves to emphasize, the extent of the local market can matter importantly for growth even when firm sizes are small.

At a conceptual level, we may distinguish three ways--called here "multiplier," "accelerator," and "threshold" effects--in which local production may depend on the local market. In the first, based on the familiar "multiplier" mechanism of macroeconomics, the level of local production increases roughly proportionately with the size of local income or population. This relationship appears to characterize trade, much of the service sector, and manufacturing activities such as printing or the processing of perishable foods. In proximate terms, the "multiplier" relationship probably explains most of the expansion of the Pacific Coast economy after the war. But such growth is "passive" or "induced" and, from first principles, cannot account for the entire increase or explain its fundamental cause.

The second effect, based on the accelerator principle, recognizes that for some activities the size of local demand depends on the change (rather than the level) of local population and income. The construction sector and building-materials industries fall into this category. The vigorous growth of building activity explains another large part of the region's post-war recovery. But this mechanism can not alone account for why the higher level of economic activity was sustainable. As the discussion of the investment accelerator in any standard macro text points out, the process has self-generating cycles. Once growth begins to slow, sectors characterized by an accelerator relationship will begin to contract, further slowing the economy. To explain the appearance of a permanently high level of economic activity in the region requires something more.

The third type of "home market effect"--the "threshold" effect recently highlighted in the New Economic Geography literature--is one possibility. The idea here is that production technologies for some goods involve fixed costs or other forms of increasing-returns-to-scale that make local production unprofitable if the local market is too small. As the market grows, it becomes economical to establish a larger number of plants producing a wider range of goods in the region. In this case, local production will

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[43] Betty C. Churchill, "State Distribution of Business Concerns," Survey of Current Business (Nov. 1954): 14-20.

increase more than one-for-one with an increase in the size of the local market. Much of the increase in western manufacturing outside of the "war industries" appears to fit into this category.

Multiple Equilibria?

The third type effect of "home market effect" is especially intriguing in light the prediction in the New Economic Geography literature that a region might possess more than one equilibrium level of economic activity consistent with the same "fundamentals." Paul Krugman's work has emphasized that three factors-- increasing returns to scale (with the accompanying conditions of imperfect competition), labor mobility, and transportation costs -- are key for such "home market effects" to matter significantly. The case of manufacturing on the Pacific Coast in the mid-twentieth century matches the theoretical requirements well.[44]

In addition, accounts of the West's growth written as the region developed--the key works here are by Gordon and Niklason--stress the role of "home market effects" in the growth process. Gordon called the inadequate size of the western market "the most important factor that has hampered the growth of manufacturing" in the region. Because of the small market, western firms could not produce "on a sufficiently large scale" to offset the competitive advantages of eastern producing centers. Niklason's account of the long-run growth process is particular apt:

> The volume of output necessary to take full advantage of the saving incident to large scale production depends upon the product, and the differences between various products in this respect are great. This factor alone precludes the immediate development of certain industries common to older, more populous regions...However, as population increases and creates larger markets, opportunity is given to establish new industries until eventually industrial maturity is attained....

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[44] Paul Krugman, Development, Geography, and Economic Theory (Cambridge, Ma: MIT Press, 1995); and Masahisa Fujita, Paul Krugman, and Anthony J.Venables, The Spatial Economy: Cities, Regions, and International Trade (Cambridge, MA: MIT Press, 1999). The work obviously builds on the shoulders of giants such as Adam Smith, Wealth of Nations (London: Methuen, 1904) esp. Ch. 1-3 on the division of

These accounts also recognized the reverse flow from local production to local market size, which made the process self-reinforcing. Indeed, a reading of the region's business press yields the impression that the process was self-generating. In particular, many writers in the 1940s argued the temporary boom during World War II set "the West on its Way."[45]

Did the World War II shock shift the Pacific Coast economy from a "low-level" equilibrium to a "high-level" equilibrium? Were the "home market effects" that strong? To address these questions, this section explores in greater detail the long-run relationship between income and the value of manufacturing production. As part of larger project on the economic development of the region, I have constructed a new panel data set on manufacturing activity in the United States and California for the period since 1849. Comprehensive data on four-digit industries were drawn from the Census of Manufacturing and assembled into consistent time series. (A list of the variables used in the analysis is provided in Table 9. Their summary statistics are reported in Table 10.) Unfortunately the data refer only to California and not the Pacific Coast as a whole. Given the state's great importance in the region and its dominant role in the expansion during World War II, examining the California experience in detail promises to shed considerable light on the development process of the region more generally.

To assess the role of "home market effects," I predict the level of real manufacturing value added in California using the level (or national share) of personal

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labor and Alfred Marshall, Principles of Economics (London: MacMillan, 1952) esp. Book IV, Ch. X on the location of industry.

[45] C. R. Niklason, Commercial Survey of the Pacific Southwest (Washington, D.C.: GPO, 1930) 404, see also 398; Margaret Gordon, Employment Expansion and Population Growth (Berkeley: UC Press, 1954): 36, 56-57, 63, 70 and California Reconstruction and Re-employment Commission, The Steel and Steel-Using Industries of California, E.T.Grether, et al. (Sacramento: State Printing Office, 1946), esp. Ch IV.

A 1939 study by the Pacific Northwest Regional Planning Commission offers a similar analysis regarding economies of Oregon and Washington: "The first and probably the greatest deterrent to industrial expansion in the Pacific Northwest is the lack of a large consuming population. Mass production requires mass purchasing. A population well under 4 million does not have this mass purchasing power…branches of national concerns will not be established until the local market is large enough to make this expansion profitable." Northwest Regional Council, Men and Resources: A Study of Economic Opportunity in the Pacific Northwest, Condensation of a Report and Supporting Memoranda: "Migration and the Development of Economic Opportunity," prepared by the Pacific Northwest Regional Planning Commission, 1939, (Portland, OR: Northwest Regional Council, 1941): 60-61.

income earned in the state as a measure of the size of the home market.[46] This analysis adopts the following conceptual approach: California real manufacturing value added is modeled as proportional to national real manufacturing value added,

$$CalRVA_{it} = \alpha_{it} USRVA_{it}.$$

where the proportion, α_{it}, depends on relative demand, $\delta(D_{it})$, and supply, $\sigma(S_{it})$. D represents the set of demand shifters, S represents supply shifters. That is,

$$CalRVA_{it} = \delta(D_{it})\sigma(S_{it})USRVA_{it}.$$

Relative supply is modeled as a function of establishment scale, human capital requirements, relative wages over time, freight rates over time, and the industry's two-digit category. Relative demand is modeled as a function of the California income relative to national income (call $\theta_t = CalY_t/USY_t$) and, in some formulations, whether the industry exports.

A sample formulation would have θ_t raised to a power η as in:

$$CalRVA_{it} = \delta(\theta_t)\ \sigma(Z_{it})\ USRVA_{it} = \theta_t^{\eta}\ \sigma(Z_{it})\ USRVA_{it} \qquad \text{(or in logs)}$$

$$\log(CalRVA_{it}) = \eta \log(\theta_t) + \log \sigma(Z_{it}) + \log(USRVA_{it})$$

In the models run, the coefficient on $\log(USRVA_{it})$ is not constrained to equal unity, reflecting the possibility that USRVA enters in the supply shifters as well.

Following in the spirit of the Davis/Weinstein interpretation of Krugman's work, the test of the "home market effect" hypothesis has two forms:

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[46] Data series based on this general concept are available annually from the Department of Commerce from 1929 on and from Easterlin for 1880, 1900, and 1920. Richard Easterlin, "Regional Growth in Income," in Simon Kuznets, et al., Population Redistribution and Economic Growth: United States, 1870-1950, 3 Vols. (Philadelphia: American Philosophical Society, 1957), III: 188, and for 1929-1960: U.S. Department of Commerce, State Personal Income, 1929-1982 (Washington, D.C.: GPO, 1984). Using a methodology similar to Easterlin's, I have developed independent state estimates for 1890 and 1910. The intervening years were filled in by interpolation.

$\eta>0$ "home markets" matter at least weakly, (for example, transport costs>0).

$\eta>1$ "home markets effects" lead to a greater than one-for-one increase in production in line with the New Economic Geography models.[47]

Table 11 presents the results of the Tobit regressions run on the pooled cross-section/time series over the 1879-1963 period. Equation 1 predicts the (log of) real value added of each industry in California based on the (log of) industry's national real value added, establishment scale, and wages per wage earner, and time-series variables reflecting the general relative wage in California, an index of real regional freight rate, and California personal income and national personal income.[48] A set of consistent and largely sensible results emerges from the analysis. Industries with large establishment sizes nationally (as captured by lusrvest) had lower levels of output in the state, confirming the impression that the region's limited market constrained industrial activity in sectors characterized by increasing-returns-to-scale. Industries with hihg human capital intensity (reflected in lusrwgwe) were more common in the state.

Among the time series variables, the relative wage variable has a significant negative effect whereas the freight rates variable proved insignificant. The coefficient on California income has a large positive effect, but that on national income has a large(r) negative effect, which is troubling. Is this due to strong backwash effects? It seems more likely to be the result of the substantial colinearity that exists between state and national incomes. In line with the conceptual approach outlined above, the model may be run using income shares. The standard likelihood ratio test approves of this formulation (but it is interesting that the use of manufacturing output shares, that is, constraining the coefficient of lusrva to be unity, is rejected.)

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47 Donald R. Davis, "The Home Market, Trade, and Industrial Structure," American Economic Review, 88:5, (Dec. 1998): 1264-76; and Donald R. Davis and David E. Weinstein, "Economic Geography and Regional Production Structure: An Empirical Investigation," European Economic Review, 43:2, (Feb. 1999): 379-407.

48 One potential difficulty that must give pause is the endogeneity of industrial production and the size of the home market/ regional income. Indeed, the feedback from production to the market size is at the heart of the cumulative causation story. Here is where the micro-data help (in addition, to providing standard errors on the magnitude of the effects and a far number of degrees of freedom to test alternative explanations.) The typical 4-digit industry was very small compared with the total size of the California economy. For example, in 1939, the value added of the median California industry was $577,099, a little over one-tenth of one percent of the total personal income of $5.3 billion.

Equation 2 reports the results of the income share regression. The coefficient of California's income share (as reflected by lcalusy) becomes about 1.44, which implies that a ten-percent increase in the size of the region's market increases its industrial output by about 14 percent. This seems large, but it is not wholly implausible given that the elasticity of national manufacturing output with respect to income was about 1.27 in the sample. What remains implausible is that the effect is constant over all market sizes. Equation 3 addresses this problem by adding (orthogonalized) higher order terms in the market size variable. Likelihood ratio tests approve of including terms up to the third order. These results suggest an S-shaped and somewhat more damped "home market effect." The exact impact of a given change in the market size depends on what the income share is.

A key problem in the interpretation in these regressions is the issue of omitted variable biases. To control for the possibility that short-run supply shocks (strikes, earthquakes) might be attributed to the California market share, I have included individual year dummies in the model successively. In no case were the effects statistically significant or the basic results altered. Inclusion of a time trend also proved inconsequential. A further possible problem is that the results may reflect business cycle effects. To control for this effect, I included a measure of the US output gap, specifically the deviation of real GDP from its long-run average. The business cycle coefficient proved statistically insignificant and again the basic pattern of results was not changed.

There remains the possibility that the measured "home market effects" are picking up omitted long-run supply shifts. Indeed, the New Economic Geography literature has its own supply-side candidate—labor-market-pooling effects which can also lead to a positive feedback relationship. One way to begin to address this issue is to examine a model in which the export and non-export industries are treated separately. The "home market" and "plant scale" effects are presumably less important for the export industries. If the "home market" effect remains strong, it lends support to the argument that the model is really capturing supply-side instead of demand-side forces.

Equation 4 runs the regression with separate coefficients for the leading export activities, defined to comprise canning, petroleum refining, shipbuilding, and aircraft.[49] The regression includes a new set of variables created by multiplying the existing variables times an one/zero dummy reflecting whether or not the industry falls in the export category. Essentially, these industries are allowed separate slope terms. While the estimates are not highly precise, the separate slope terms wipe out most of the establishment size and "home market" effects for the export industries. An increase in the region's market size by one percent (using 1939 as a base) *reduces* output in the export industries by 0.6 percent. The absence of a "home market effect" for exports paradoxically supports the "home market" hypothesis overall-- it's not working where it shouldn't.[50]

What do these results imply about the possibility of multiple equilibria and the impact of World War II spending? To explore these issues, consider a toy model of the California economy. Let it be made up of three parts: a resource-base or export sector that produces a given output, B, independent of the size of the home market; a service sector where production grows proportionately with the home market, S=sY, and the manufacturing sector characterized by the non-linear production-income relationship estimated above, M(Y). Ignoring the distinction between income and output, aggregate income will equal:

(1) $Y=B+sY+ M(Y)=(B+M(Y))/(1-s)$.

Obviously, there may be multiple equilibria in Y supported by the same base, B, if the non-linear equation (*) has more than one root. This will depend on the strength of the non-linear production-income relationship embodied in M(Y) relative to the size of B. Even if there are multiple equilibria, they may not be very different if the roots are close.

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[49] Inter-regional trade data are scanty but the available information indicates that canning and petroleum accounted for the vast majority of California manufacturing exports. Including aircraft and shipbuilding, these industries account for about 19.5 of California manufacturing value added in 1939.

[50] The cubic series is quite well behaved within the sample, but it would be problematic to extrapolate it far out of sample because no bounds have been imposed. The underlying series on the market/income share is quite flat until the 1900s and then "takes off"; the stabilization of the income share begins in the late 1950s and early 1960s, at the end of the period under consideration.

Let us use this model to analyze the state of the California economy on the eve of World War Two. To be concrete, assume the primary sector (farming, agricultural services, and mining) is the base. Over the 1938-40 period, this sector made up 10.5 percent of earnings in California whereas manufacturing accounted for 16.1 percent of the state's earnings. We will treat the remaining 73.4 percent of earnings as the service sector.[51]

From the regression analysis, we know that holding all other variables (including national income) constant, the M(Y) relationship in 1939 has roughly the following form in the cubic specification:

Percentage Increase in California:

Income	5	10	15	20	25	30
Manufacturing Value Added	9.4	17.0	22.8	26.8	29.0	29.4

A data point of special interest what would happen if income increased by 21 percent--the percentage change in California's income share over the 1939-47 period. The regression equations indicate that a 21 percent increase in the California home market would have resulted in a 27.3 percent increase in manufacturing value added under the cubic specification. In the model sketched above, would such increases in income have created a sufficiently large market (in the absence in a change in the base) to support itself? Simple calculations suggest not; the effects are powerful, but not quite strong enough. An increase in manufacturing value added of 27.3 percent combined with no change in the base would have increased California income by only about 16.6 percent (=(0.105+1.273*0.161)/0.266)-1).

But the results suggest that an increase in 1939 income by 11 percent would have been self-sustaining. An 11 percent increase would have increased manufacturing output by 18.5 percent, which in turn would have been sufficient to support the initial increase in income. This implies that roughly one-half of the increase in the region's income share

[51] If the definition of the base is enlarged to include federal government earnings (the extractive sector plus), the share of total income becomes 15.7 percent in 1939. The service share becomes 68.2 percent.

over the war might be due to a transition between "low-level" and "high-level" equilibria. Even if the "home market effects" have been overestimated here, the slope of the output-income relationship shown in equation (1) appears quite steep in the relevant range. This implies a small change in the base, for example due to the shift in military spending from its low pre-war values to its somewhat higher post-war values, could have had a large effect on the level of aggregate activity. Obviously this is just a toy model, but these results offer surprisingly strong support for the rather speculative predictions of the new Economic Geography literature and call for further research.

Concluding remarks

This paper argues that the experience of the Pacific Coast economy after World War II is consistent with the existence of strong "home market effects." The econometric analysis of the long-run relationship between local income and manufacturing production suggests that these effects were not constant across all market sizes. Rather, they first increased and then diminished in strength. This has two interesting historical implications.

First, the "home market effects" appear strongest not in the immediate post-war period, but in the inter-war years. During the 1920s, the Pacific Coast, and especially California, enjoyed a period of vigorous economic growth, which was cut short by the Great Depression. Many aspects of the region's post-war experience—its population growth, the establishment of branch plants by national manufacturing firms, the building boom, and the expansion of the service sector—were also present in the 1920s. It remains an open question whether World War II shocked the Pacific Coast to a level of economic activity that was otherwise unattainable or merely sped the transition to the inevitable long-run equilibrium. I would argue that the continuity vs. discontinuity debate over the impact of World War II in the West should shift to consider this broader issue, which requires giving greater attention to the region's secular development and less to the "four short years" of the war.

Making this change would tend to reduce further the possibility of multiple equilibria.

Second, the "home market effects" became far weaker as the region matured. If regional leaders used the late-1940s experience as a guide and downplayed the risk of becoming dependence on military spending in the Cold War period, they were drawing a mistaken historical lesson. When the cutbacks came in the early-1990s, the region's economy appears to have suffered much more than after the larger declines of military spending in the 1945-48 period. There was no great "unfilled" home market waiting in the wings to absorb the displaced aerospace workers and to propel continued growth. Unfortunately, you are only truly young once.

Selected References

California State Chamber of Commerce. Postwar Industrial Growth in California, 1945-1948. 1948-49 Series Report No. 41.

California State Department of Employment. Proceedings of the Governor's Conference on Unemployment. (Sacramento, CA: 1949).

California State Division of Labor Statistics and Research. Handbook of California Labor Statistics, 1951-1952. (San Francisco, April 1953).

California State Division of Labor Statistics and Research. Labor in California, 1945-1946. (San Francisco, June 1947).

California State Reconstruction and Re-employment Commission. Estimates of Population Growth in California, 1940-1950. (Sacramento, CA: June 1944).

California State Reconstruction and Reemployment Commission. How Much Post-War Income? (Sacramento, CA: Sept 1944).

California State Reconstruction and Re-employment Commission. How Many Californians? (Sacramento, CA: July 1944).

California State Reconstruction and Re-employment Commission. The Steel and Steel-Using Industries of California. E.T.Grether, et al. (Sacramento, CA: State Printing Office, 1946).

Churchill, Betty C. "State Distribution of Business Concerns." Survey of Current Business (Nov. 1954): 14-20.

Cunningham, William G. The Aircraft Industry: A Study in Industrial Location (Los Angeles: Lorrin Morrison, 1951).

Davis, Donald R. "The Home Market, Trade, and Industrial Structure." American Economic Review. 88:5, (Dec. 1998): 1264-76.

Davis, Donald R. and David E. Weinstein. "Economic Geography and Regional Production Structure: An Empirical Investigation." European Economic Review. 43:2, (Feb. 1999): 379-407.

Easterlin, Richard. "Regional Growth in Income." in Simon Kuznets, et al., Population Redistribution and Economic Growth: United States, 1870-1950. 3 Vols. (Philadelphia: American Philosophical Society, 1957) III: 188.

Ehrenberg, Ronald G. and Robert S. Smith. Modern Labor Economics: Theory and Public Policy. 4th Ed. (New York: Harper Collins, 1991).

Federal Reserve Bank of San Francisco Monthly Review. (Various Years).

Fisher, Gerald J. A Statistical Summary of Shipbuilding under the US Maritime Commission During World War II. Historical Reports of the War Administration, US Maritime Commission, No. 2, 1949.

Fujita, Masahisa, Paul Krugman, and Anthony J. Venables. The Spatial Economy: Cities, Regions, and International Trade. (Cambridge, MA: MIT Press, 1999).

Gordon, Margaret. Employment Expansion and Population Growth. (Berkeley: University of California Press, 1954).

Higgs, Robert. "From Central Planning to the Market: The American Transition, 1945-1947." Journal of Economic History 59(3), (Sept. 1999): 600-623

Higgs, Robert. "Wartime Prosperity? A Reassessment of the U.S. Economy in the 1940s." Journal of Economic History 52(1), (March 1992): 41-60.

Jacobs, Jane. The Economy of Cities. (New York: Random House, 1969).

Jaffe, Abram J. and Seymour L Wolfbein. "Postwar Migration Plans of Army Enlisted Men." Annals of the American Academy of Political and Social Science. Vol. 238 (March 1945): 18-26.

Krugman, Paul. Development, Geography, and Economic Theory. (Cambridge, MA: MIT Press, 1995).

Lotchin, Roger. Fortress California, 1910-1961: From Warfare to Welfare. (New York: Oxford, 1992).

Markusen, Ann et al., The Rise of the Gunbelt: the Military Remapping of Industrial America. (New York : Oxford University Press, 1991).

Marshall, Alfred, Principles of Economics. (London: MacMillan, 1952).

Nash, Gerald. World War II and the West: Reshaping the Economy. (Lincoln: University of Nebraska Press, 1990).

Niklason, C. R. Commercial Survey of the Pacific Southwest. (Washington, D.C.: GPO, 1930).

Northwest Regional Council. Men and Resources: A Study of Economic Opportunity in the Pacific Northwest. Condensation of a Report and Supporting Memoranda: "Migration

and the Development of Economic Opportunity." prepared by the Pacific Northwest Regional Planning Commission, 1939 (Portland, OR: Northwest Regional Council, 1941).

Oregon State. Annual Reports of the Unemployment Compensation Commission. (Salem OR).

Pacific Factory. (various years).

Pacific Northwest Business. (various years).

Pearlman, Lester M. "Prospective Labor Supply on the West Coast." Monthly Labor Review. 64 (April 1947): 565-66.

Puget Sound Regional Planning Commission. Puget Sound Region War and Postwar Development. (Washington, DC: GPO, 1943).

Rhode, Paul W. "The Impact of World War Two Spending on the California Economy." in R. Lotchin (ed.), The Way We Really Were: The Golden State in the Second Great War. (Urbana: University of Illinois Press, 2000): 93-119.

Rhode, Paul W. "The Nash Thesis Revisited: An Economic Historian's View." in "Special Issue: Fortress California at War." Pacific Historical Review 63 (Aug. 1994): 363-92.

Smith, Adam. Wealth of Nations. (London: Methuen, 1904).

US Bureau of Labor Statistics, Construction, (various issues).

US Bureau of Census. County Data Book: 1947. (Washington, DC: GPO, 1947).

US Bureau of Census. Estimated Number of Veterans of World War II in Continental United States by States, April 1, 1947. Current Population Survey, P25, No. 5.

US Civilian Aeronautical Administration. "Aircraft, Engine, and Propeller Production, US Military Acceptances, 1940-45". (Washington, DC: 1946).

US Civilian Aeronautical Administration. Statistical Handbook of Civil Aviation. (various years).

US Council of Economic Advisors. Midyear Economic Report of the President, July 21, 1947 (Washington, DC: GPO, 1947).

US Department of Commerce. Office of Domestic Commerce. State and Regional Market Indicators, 1939-45. Economics Series. No. 60 (Washington, DC: GPO 1947).

US Department of Commerce. Office of Domestic Commerce. State, Regional, and Local Market Indicators, 1939-46. Economics Series. No. 67 (Washington, DC: GPO 1948).

US Department of Commerce. State Personal Income, 1929-1982. (Washington, D.C.: GPO, 1984).

US Department of Commerce. Statistical Abstract of the United States: 1997. (Washington, D.C.: GPO, 1997).

US Senate. Hearings Before the Special Committee to Study and Survey Problems of Small Business Enterprises. 78th Cong., 2nd Sess., Part 42 Developing the West Through Small Business: III, Field Hearings Portland Oreg., July 28, 1944. (Washington, DC: GPO, 1944).

US Senate. Hearings Before the Special Committee to Study and Survey Problems of Small Business Enterprises. 78th Cong., 2nd Sess., Part 41 Developing the West Through Small Business: II, Field Hearings Seattle, Wash., July 26 and 27, 1944. (Washington, DC: GPO, 1944).

US Senate. Hearings Before the Special Committee to Study and Survey Problems of Small Business Enterprises. 79th Cong., 2nd Sess., Part 86 California Looks to Its Economic Future: II, Field Hearings Fresno, Calif., Feb. 25, 1946. (Washington, DC: GPO, 1946).

Washington State Employment Security Department. Annual Reports to the Governor. (Olympia. WA).

Wilcox, Winifred S. "West Coast Manpower Program." Manpower Review. 10:11 (Nov. 1943): 3-5, 24.

TABLE 1: Military Spending in the Pacific Region, 1940-45.

	California	Oregon	Washington	Pacific Coast	Percentage of Nation
Total in Billion Dollars	19.7	2.1	5.2	27.0	11.8
Total Supply Contracts	17.1	1.8	4.6	23.5	12.0
Aircraft	9.3	0.0	2.0	11.2	19.0
Ships	5.2	1.6	2.1	8.9	29.8
Ordnance	0.6	0.0	0.1	0.7	1.5
Comm. Eqmt	0.1	0.0	0.0	0.1	1.2
Others	2.0	0.2	0.4	2.6	5.4
Total Facilities	2.5	0.3	0.7	3.5	10.9
Industrial	1.0	0.1	0.3	1.5	8.0
Military	1.5	0.2	0.3	2.0	14.7
1939 Mfg Wage-Earners					
Total in Thousands	271.3	57.3	82.3	411.0	5.3
Aircraft	16.0	-	3.4	19.4	39.9
Shipbuilding	4.0	0.2	1.6	5.8	8.4
1940 Population	6,907	1,090	1,736	9,733	6.5
In Thousands					

Facillities through May 1945, Supply Contracts through June 1945

Source:
US Department of Commerce, Office of Domestic Commerce, State and Regional Market Indicators, 1939-45, Economics Series. No. 60 (Washington, DC: GPO 1947), pp. 28-29.

TABLE 2: Pacific Coast Civilian Employment (in Thousands) by Major Sector, 1939-50.

	Total	Mining	Contract Construction	Manufacturing	Transport & Pub. Utilities	Trade	FIRE	Service	Government
PACIFIC									
1939	2501.6	45.6	106.2	588.4	271.3	660.0	121.7	344.4	364.0
1940	2670.2	46.7	124.1	658.9	282.9	688.9	127.4	354.0	387.3
1941	3117.8	46.7	184.8	860.8	314.7	750.1	134.0	377.5	449.2
1942	3722.8	39.7	219.3	1261.4	335.7	770.0	128.4	412.1	556.2
1943	4239.1	34.6	201.2	1648.3	354.7	777.7	125.2	439.2	658.2
1944	4305.1	34.3	204.0	1581.5	378.0	805.0	125.3	463.0	714.0
1945	4052.1	34.4	175.3	1249.3	390.1	853.6	130.6	476.8	742.0
1946	4014.8	37.8	223.3	1001.8	408.4	965.9	158.7	529.0	689.9
1947	4170.4	38.8	265.7	1034.9	428.7	1023.0	170.2	546.4	662.7
1948	4281.5	40.4	301.6	1053.1	432.9	1042.9	179.1	547.5	684.0
1949	4178.2	38.9	263.6	1003.2	416.5	1014.1	180.7	542.8	718.4
1950	4331.1	36.6	295.1	1076.3	419.8	1032.9	194.1	545.5	730.8
Share of Growth									
1940-44	1.00	-0.01	0.05	0.56	0.06	0.07	0.00	0.07	0.20
1944-50	1.00	0.09	3.50	-19.43	1.61	8.77	2.65	3.17	0.65
1940-50	1.00	-0.01	0.10	0.25	0.08	0.21	0.04	0.12	0.21
CALIFORNIA									
1939	1812.0	40.0	76.4	384.4	185.1	504.7	96.4	274.7	250.3
1940	1931.8	40.0	89.5	440.2	190.3	524.2	100.9	280.4	266.3
1941	2264.9	40.1	135.1	593.6	213.0	572.1	105.8	297.4	307.8
1942	2689.7	33.8	152.3	876.0	233.8	588.0	100.4	321.3	384.1
1943	3083.5	29.4	137.9	1165.5	250.8	596.1	97.3	341.5	465.0
1944	3116.5	29.9	133.1	1109.7	268.0	614.0	96.0	355.2	510.6
1945	2960.8	30.6	136.1	860.8	279.5	654.2	100.2	365.7	533.7
1946	2972.6	33.5	172.3	706.7	295.5	737.1	122.3	405.0	500.2
1947	3079.9	34.2	202.4	721.8	312.6	774.7	132.3	418.9	483.0
1948	3162.9	35.6	225.2	734.2	317.9	790.6	139.8	418.7	500.9
1949	3088.0	34.4	197.7	701.5	306.0	767.2	141.0	415.6	524.6
1950	3209.5	32.3	225.3	759.7	307.1	783.2	151.8	416.8	533.3
Share of Growth									
1940-44	1.00	-0.01	0.04	0.57	0.07	0.08	0.00	0.06	0.21
1944-50	1.00	0.03	0.99	-3.76	0.42	1.82	0.60	0.66	0.24
1940-50	1.00	-0.01	0.11	0.25	0.09	0.20	0.04	0.11	0.21

Source: US Bureau of Labor Statistics website.

TABLE 3: "Post-war Intentions of Pacific Coast Manufacturers"

Employment in Thousand Workers

	Actual		Expected if Conditions	
	1939	1943	"Good "	"Bad"
Pacific Coast				
All	558.8	1588.9	781.6	500
All excl. shipbdg and aircraft	524.1	733.6	704.9	NA
California				
All	375.7	1137.1	535.4	350
All excl. shipbdg and aircraft	347.4	523.1	474.9	NA
Oregon/Washington				
All	183.1	451.8	246.2	150
All excl. shipbdg and aircraft	176.7	210.5	230.0	NA

Source: Federal Reserve Bank of San Francisco, Monthly Review (Feb. 1945), pp. 17-20.

TABLE 4: Geographic Distribution of Aircraft Floorspace

Total covered floor area in thousand square feet

	Jan. 1940	Jan. 1944	Dec. 1947	Dec. 1948
Floorspace				
New England	271	2259	1808	1903
Middle Atlantic	1710	19918	6751	6189
East North Central	269	17251	1672	3065
West North Central	671	9561	3410	5842
South Atlantic	1337	10983	3722	3772
South Central	40	16619	4106	4003
Pacific	4479	29533	20904	22200
United States	8777	106124	42373	46974
Percentage Shares				
New England	3.1	2.1	4.3	4.1
Middle Atlantic	19.5	18.8	15.9	13.2
East North Central	3.1	16.3	3.9	6.5
West North Central	7.6	9.0	8.0	12.4
South Atlantic	15.2	10.3	8.8	8.0
South Central	0.5	15.7	9.7	8.5
Pacific	51.0	27.8	49.3	47.3

Sources: Cunningham, pp. 203-15,US Civilian Aeronautical Administration, Statistical Handbook of Civil Aviation, 1948, p. 54; 1949, p, 54

TABLE 5: Real Value of Urban Construction Expenditures, 1943-50.

In Millions of 1958 Dollars

	All Urban Building Construction		New Residential Buildings	
	United States	Pacific Coast	United States	Pacific Coast
1943	2222.0	535.6	1027.1	287.1
1944	1892.4	515.6	594.0	197.3
1945	3294.6	742.5	1110.9	316.1
1946	7111.5	1431.6	3768.8	779.2
1947	7457.5	1455.4	3964.3	832.8
1948	8764.3	1776.6	4529.4	1037.2
1949	9352.8	1474.7	5120.5	833.5
1950	13070.3	2030.7	7769.5	1228.9

Sources:
US Bureau of Labor Statistics, Construction, Bull. 916, 984, 1047,1146
deflated by GNP deflator, Historical Statistics of the US, Series F5, p. 224.

TABLE 6: Production Workers in Pacific Coast Manufacturing, 1939-50.

	1939	1947	1950	% Change 1939-47
20 Food	94,185	130,876	132,725	39.0
21 Tobacco	na	na	na	na
22 Textiles	6,822	7,828	6,519	14.7
23 Apparel	25,831	42,737	52,735	65.4
24 Lumber	63,506	123,623	156,583	94.7
25 Furniture	14,097	22,355	20,618	58.6
26 Paper	16,613	25,787	30,346	55.2
27 Printing	20,529	30,480	35,892	48.5
28 Chemicals	10,940	21,255	26,324	94.3
29 Petroleum	9,601	17,628	14,693	83.6
30 Rubber	na	na	na	na
31 Leather	2,848	5,603	na	96.7
32 Stone/Glass/Clay	13,115	27,765	28,901	111.7
33 Primary Metals	15,790	36,127	42,318	128.8
34 Fabricated Metals	22,356	52,677	52,245	135.6
35 Machinery (Non-Elec.)	15,623	47,294	39,785	202.7
36 Electrical Eqmt.	4,137	15,667	15,993	278.7
37 Transportation Eqmt	32,097	107,039	107,965	233.5
38 Instruments	1,462	5,565	6,714	280.6
39 Misc. Manufactures	5,540	12,985	na	134.4
Total	411,038	745,915	804,465	81.5
372 Aircraft	19,426	66,510	na	242.4
373 Shipbuilding	5,823	23,727	na	307.5
Combined	25,249	90,237	na	257.4
Transport minus aircraft and shipbuilding	6,848	16,802	na	145.4
Total minus aircraft and shipbuilding	385,789	655,678	na	70.0

Source: Census of Manufactures, 1947, Vo. III, Statistics by States (1950) pp. 50-51, 92, 505, 627, and Annual Survey of Manufactures: 1949 and 1950 (1952) p. 84.

TABLE 7: Business Formation on the Pacific Coast and United States, 1944-50

Number of Firms in Operation on Jan. 1 (in thousands)

	1944	1945	1946	1947	1948	1949	1950	Ratio 1950/ 1945	Average Regional Share	Average National Share
All Sectors										
Pacific Coast	263.0	296.7	336.0	395.2	426.6	440.2	436.2	1.47		10.7%
California	194.3	219.3	247.2	292.5	315.9	326.3	322.6	1.47		7.9%
United States	2839.1	2995.4	3242.5	3651.2	3872.9	3984.1	4008.7	1.34		
Contract Construction										
Pacific Coast		18.3	24.7	36.6	42.7	46.4	46.8	2.56	9.7%	13.2%
California		13.8	18.4	27.5	32.6	35.9	36.0	2.61	10.0%	10.1%
United States		160.1	199.0	268.1	310.3	338.9	352.5	2.20	7.7%	
Manufacturing										
Pacific Coast		24.9	26.5	32.4	36.2	36.8	36.3	1.46	8.7%	10.9%
California		17.2	18.4	22.1	24.5	25.3	24.8	1.44	8.0%	7.5%
United States		253.2	264.0	302.5	315.4	322.5	317.6	1.25	8.4%	
Wholesale Trade										
Pacific Coast		16.2	19.7	23.9	25.7	26.7	27.0	1.67	6.3%	9.8%
California		12.4	14.9	18.1	19.5	20.1	20.2	1.63	6.4%	7.4%
United States		186.0	208.9	242.7	254.8	260.1	263.3	1.42	6.7%	
Retail Trade										
Pacific Coast		130.0	146.0	168.9	182.3	188.8	187.3	1.44	45.1%	10.3%
California		95.5	106.6	124.8	134.5	139.0	137.4	1.44	44.9%	7.6%
United States		1356.2	1458.4	1627.0	1730.0	1782.7	1802.8	1.33	46.3%	
Service Industries										
Pacific Coast		65.9	74.5	84.9	90.2	91.2	89.8	1.36	22.3%	12.2%
California		50.3	56.4	64.7	69.1	70.1	69.2	1.38	23.1%	9.3%
United States		567.6	613.9	686.6	728.0	738.6	735.3	1.30	19.3%	
All Other Industries										
Pacific Coast		41.3	44.5	48.5	49.5	50.1	49.0	1.19	12.7%	9.1%
California		30.0	32.5	35.3	35.7	35.9	35.0	1.17	12.4%	6.6%
United States		472.3	498.3	524.3	534.4	541.3	537.2	1.14	14.7%	

Source: Betty C. Churchill, "State Distribution of Business Concerns," Survey of Current Business (Nov. 1954) pp. 14-20

TABLE 8: New Business Entries, Exit, and Transfers on the Pacific Coast and United States, 1945-50

Panel A: Number of New Business Entries, Exits, and Transfers (in thousand)

	1945	1946	1947	1948	1949	1950	Average Shares
New Businesses							
Pacific Coast	64.8	89.3	72.5	57.6	47.1	48.0	14.7%
California	46.1	66.4	54.7	43.1	35.8	34.8	10.9%
United States	422.8	617.4	460.8	393.3	331.1	348.2	
Discontinuation							
Pacific Coast	25.5	29.9	41.1	44.1	51.1	41.3	15.5%
California	18.2	21.1	31.3	32.7	39.5	30.1	11.5%
United States	175.6	208.7	239.2	282.0	306.5	289.4	
Transferred businesses							
Pacific Coast	72.5	95.0	92.9	77.5	66.7	63.2	15.5%
California	53.0	70.5	69.8	58.0	49.5	44.8	11.4%
United States	473.1	626.9	571.9	501.3	434.8	419.4	

Panel B: Entry, Exit, and Transfer Rates per 100 Firms in Operation on Jan. 1.

	1945	1946	1947	1948	1949	1950	Average
New Business Entrance Rates							
Pacific Coast	21.8	26.6	18.3	13.5	10.7	11.0	17.0
California	21.0	26.9	18.7	13.6	11.0	10.8	17.0
United States	14.1	19.0	12.6	10.2	8.3	8.7	12.2
Discontinuation Rates							
Pacific Coast	8.6	8.9	10.4	10.3	11.6	9.5	9.9
California	8.3	8.5	10.7	10.4	12.1	9.3	9.9
United States	5.9	6.4	6.6	7.3	7.7	7.2	6.8
Transfer Rates							
Far West	24.4	28.3	23.5	18.2	15.2	14.5	20.7
California	24.2	28.5	23.9	18.4	15.2	13.9	20.7
United States	15.8	19.3	15.7	12.9	10.9	10.5	14.2

Source: Betty C. Churchill, "State Distribution of Business Concerns," Survey of Current Business (Nov. 1954) pp. 14-20

TABLE 9: VARIABLE LIST

Dependent variable

lcalrva: the log of the value added of manufacturing in California deflated by the national GDP deflator.

Cross-section variables:

lusrva: the log of the value added of manufacturing in US deflated by the national GDP deflator.

lusrvest: the log of the value added of manufacturing in US deflated by the national GDP deflator and divided by the number of establishments nationally.

lusest: the log of the number of establishments nationally.

lusrwgwe: the log of the census average wage rate of manufacturing in US, as captured by the wage bill divided by the number of wage-earners/production worker and then deflated by the national GDP deflator.

Sic20-Sic38: zero/one dummy variables for the standard industrial classification categories based on the 1947 manual with Sic39, Misc. Manufacturing, as the omitted category.

export: dummy variables with one denoting canning and preserving, petroleum refining, aircraft, and shipbuilding.

Time-series variables:

lrfr: the log of an index of real freight rates based on the Southern Pacific's revenues per ton-mile deflated by the GDP deflator.

lrelwage: the log of manufacturing wage rates in California relative to the US as a whole as captured by the Census average wage.

lcalry: the log of California personal income deflated by the national GDP deflator.

lusry: the log of US personal income deflated by the national GDP deflator.

dcalusy: the difference between lcalry and lusry; orthrogonalized higher order terms also used.

year, yrX: year effects, year dummies

TABLE 10: Data description and summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
lcalrva	5174	7.423405	4.020248	0	15.92315
lusrva	5174	12.35482	1.844457	4.725273	17.88064
lusrvest	5174	7.194097	1.356098	2.826674	12.92957
lusrwgwe	5174	2.519553	0.439907	-4.298731	5.156118
lcalry	5174	15.34731	1.133722	13.27001	17.06468
lusry	5174	18.10674	0.758972	16.52545	19.28708
dcalusy	5174	-2.75943	0.384385	-3.345407	-2.2224
ocalusy2	5174	-0.00091	0.116656	-0.1492343	0.166946
ocalusy3	5174	0.005191	0.030653	-0.0432281	0.049357
lrelwage	5174	0.169469	0.083795	0.0769611	0.329304
lrfr	5174	-4.29459	0.557019	-5.041845	-2.91466
export	5174	0.020495	0.1417	0	1
sic20	5174	0.098415	0.297903	0	1
sic21	5174	0.007927	0.08869	0	1
sic22	5174	0.079466	0.270491	0	1
sic23	5174	0.069606	0.254506	0	1
sic24	5174	0.037316	0.189554	0	1
sic25	5174	0.022429	0.148087	0	1
sic26	5174	0.029002	0.167829	0	1
sic27	5174	0.03519	0.184276	0	1
sic28	5174	0.092227	0.289375	0	1
sic29	5174	0.014308	0.118768	0	1
sic30	5174	0.010248	0.10072	0	1
sic31	5174	0.031516	0.174724	0	1
sic32	5174	0.062838	0.242696	0	1
sic33	5174	0.058005	0.233775	0	1
sic34	5174	0.07676	0.266235	0	1
sic35	5174	0.072119	0.25871	0	1
sic36	5174	0.024362	0.154185	0	1
sic37	5174	0.031129	0.173684	0	1
sic38	5174	0.032289	0.176784	0	1

TABLE 11: Tobit Regressions of Pooled Cross-Section Time-Series

Dependent Variable: Lcalrva
With 2-Digit SIC Dummies

Equation		(1)	(2)	(3)	(4) All	Export	(5) Home Only
lusrva	coeff.	1.782	1.780	1.783	1.770	-0.552	1.774
	std. err.	0.033	0.033	0.033	0.033	1.061	0.033
lusrvest	coeff.	-1.256	-1.258	-1.264	-1.298	1.182	-1.299
	std. err.	0.046	0.046	0.046	0.047	0.319	0.047
lusrwgwe	coeff.	1.510	1.511	1.503	1.600	-0.552	1.060
	std. err.	0.175	0.175	0.182	0.184	1.061	0.186
lrelwage	coeff.	-1.961	-2.313	-0.911	-0.952	1.151	-0.940
	std. err.	0.828	0.758	0.946	0.945	6.698	0.959
lrfr	coeff.	-0.357	0.017	-0.820	-0.176	0.279	-0.181
	std. err.	0.407	0.085	0.213	0.212	0.739	0.216
lcalry	coeff.	1.926					
	std. err.	0.536					
lusry	coeff.	-2.414					
	std. err.	0.536					
dcalusy	coeff.		1.439	1.378	1.341	-1.131	1.334
	std. err.		0.276	0.277	0.275	0.963	0.281
ocalusy2	coeff.			-0.348	-0.429	-2.373	-0.431
	std. err.			0.433	0.434	3.080	0.440
ocalusy3	coeff.			-4.415	-4.269	3.819	-4.287
	std. err.			1.652	1.655	11.091	1.678
_se	coeff.	3.059	3.059	3.057	3.030		3.069
	std. err.	0.035	0.035	0.035	0.035		0.036
Pseudo R2		0.1508	0.1507	0.1510	0.1538		0.1497
# Obs		5174	5174	5174	5174		5068
# Left-censored Obs		948	948	948	948		948

FIGURE 1: Unemployment Rates in California, Oregon, and United States, 1940-49

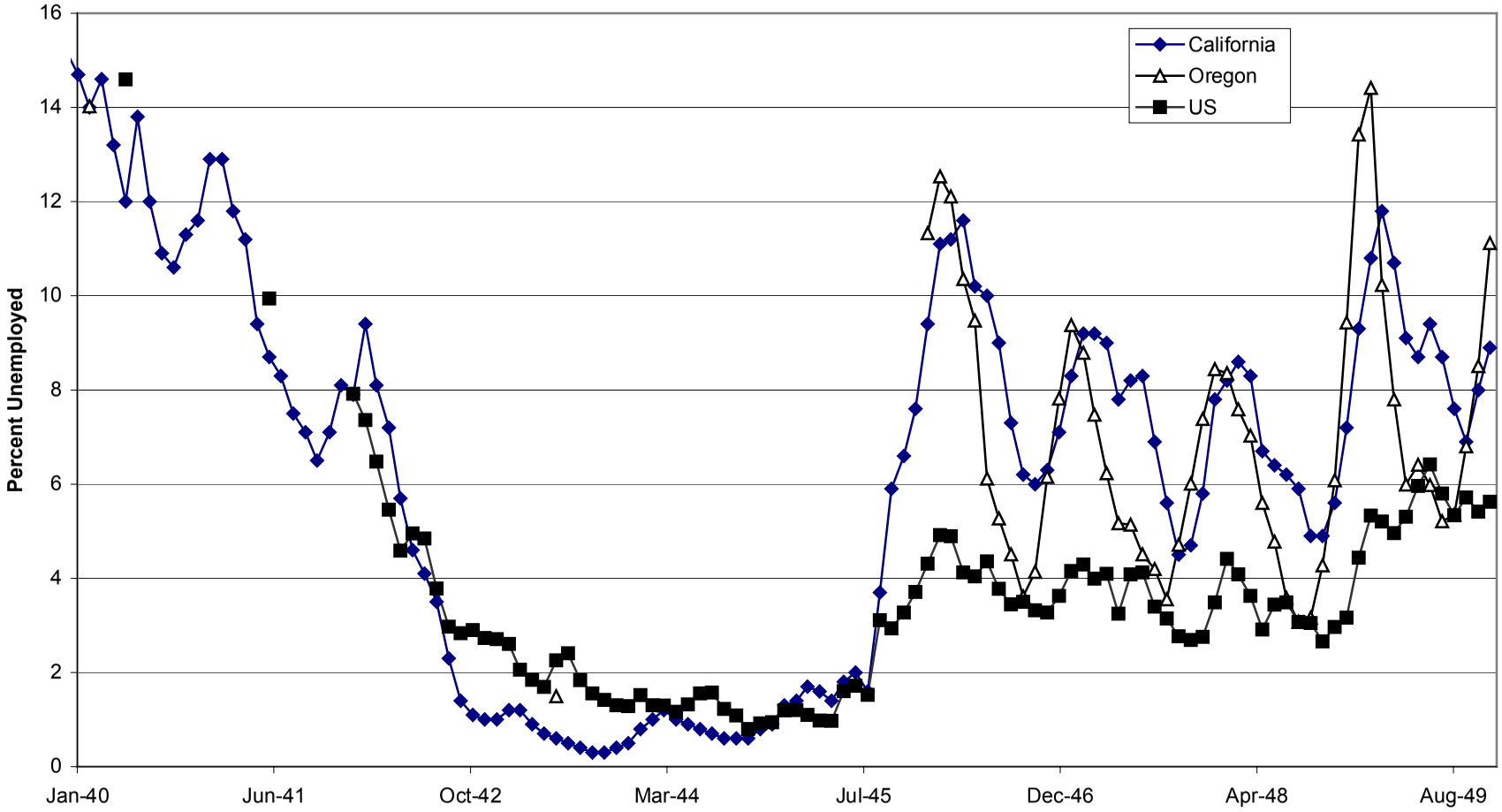

FIGURE 2: Real US Defense Expenditures, 1940-96

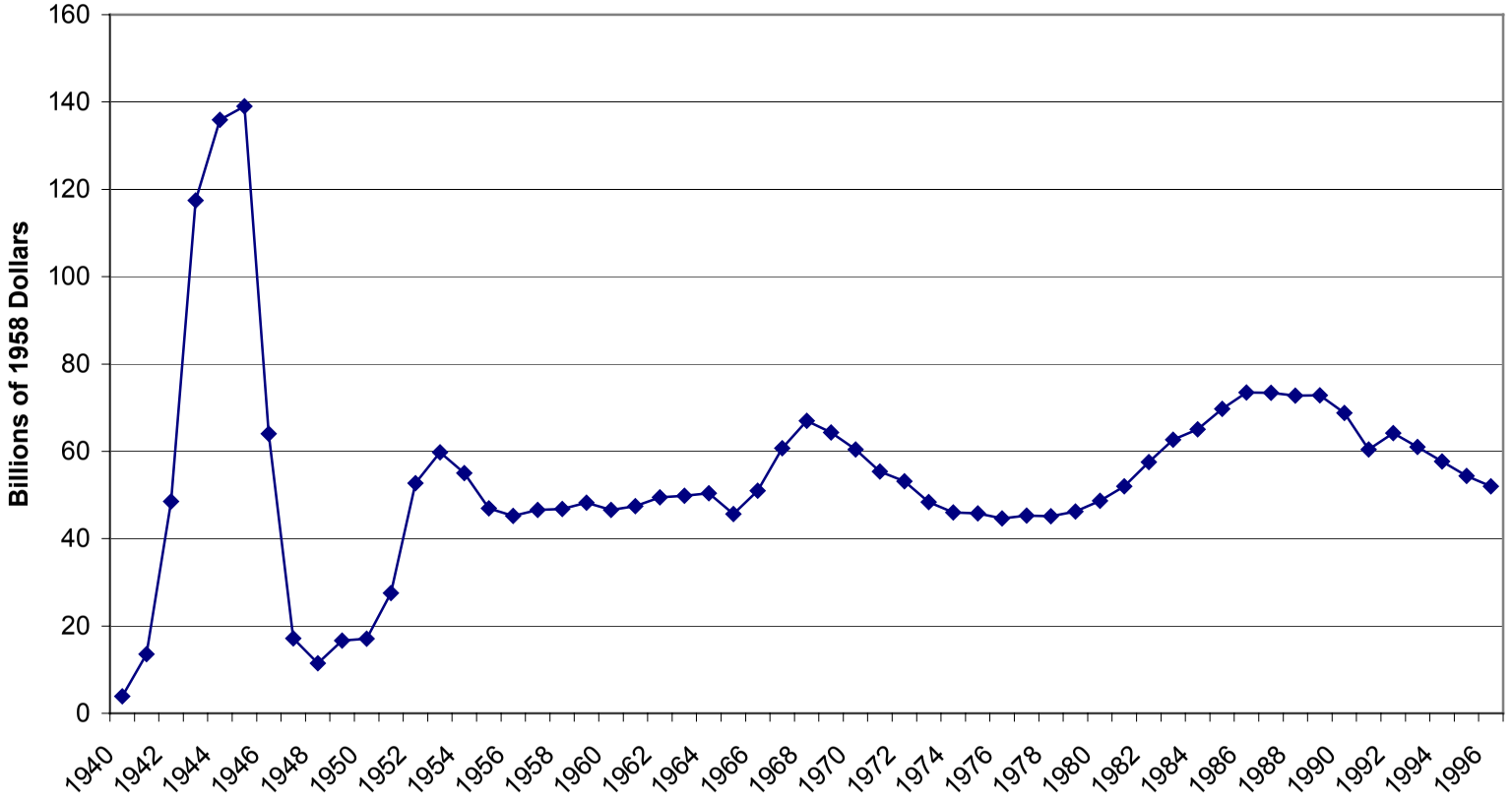

FIGURE 3: Shipbuilding Employment on the Pacific Coast and the US as a Whole, 1940-50