

THE U.S. EMPLOYMENT SERVICE AS A TWO-SIDED PLATFORM AND THE
ROLE OF SUBSIDIES IN EMPLOYER AND JOB SEEKER PARTICIPATION

by

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ABSTRACT

In one-sided markets with externalities and established, tradeable property rights, the Coase Theorem states that agents can negotiate to a Pareto efficient outcome. For intermediaries serving one-sided markets between two or more groups of agents, transaction volume is completely dependent on total price level. Thus, intermediaries cannot alter transaction volume by changing the price allocation across the participating groups.

However, in multisided markets (or platforms), the intermediary must coordinate the participation of different groups whose behavior exhibits indirect network externalities: one group of agents participates because another group participates. This means the intermediary can alter transaction volume by changing the price allocations across the groups of agents.

This dissertation analyzes administrative data from Utah and other states to investigate whether the U.S. Employment Service (USES), a federal agency that partners with state employment security agencies (SESA), operates as an intermediary of a two-sided market. If the USES does serve a two-sided market, strategic services (subsidies) could be utilized to coordinate the participation of employers and job seekers.

The results indicate some evidence the public labor exchange does function as a two-sided market. When the USES or SESA provide services to job seekers such as employment counseling, testing or skills training, this creates a positive indirect network

externality for employers as it increases the qualified pool of labor available to them on the USES platform. This appears to lead to their increased participation.

To Shirley M. LaForge

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LIST OF ABBREVIATIONS

CETA	Comprehensive Employment and Training Act of 1974
EOA	Economic Opportunity Act of 1964
ES	Employment Service
FUTA	Federal Unemployment Tax Act
FY	Fiscal Year
JTPA	Job Training Partnership Act of 1982
MDTA	Manpower Development and Training Act of 1962
PES	Public Employment Service
PY	Program Year
SES	State Employment Service
SESA	State Employment Security Agencies
SSA	Social Security Act of 1935
UDES	Utah Department of Employment Security
UDWS	Utah Department of Workforce Services
UI	Unemployment Insurance
USDOL	United States Department of Labor
USES	United States Employment Service Insurance
WIA	Workforce Investment Act of 1998
WIOA	Workforce Innovation and Opportunity Act of 2014

CHAPTER 1

INTRODUCTION

1.1 Background

In one-sided markets with externalities and established, tradeable property rights, the Coase Theorem states that agents can negotiate to a Pareto efficient outcome. For matchmaking intermediaries trying to bring two or more groups of agents together in one-sided markets, transaction volume is completely dependent on total price level. Thus, intermediaries cannot alter transaction volume by changing the price allocation across the participating groups.

However, in multisided markets (or platforms), the intermediary must “coordinate the demand of distinct groups of customers who need each other in some way” (Evans, 2003, p. 191). This means the intermediary can alter transaction volume by changing the price allocations across the groups of agents. This is because of indirect network externalities: One group of agents participates because another group participates.

This paper investigates whether the U.S. Employment Service (USES), a federal agency that partners with state employment security agencies (SESA), operates as an intermediary of a two-sided market (the public labor exchange) coordinating the demand of two groups of agents: employers and job seekers. If the public labor exchange is a

two-sided market, USES policy could effectively alter the transaction volume of the public labor exchange by choosing which services (subsidies) it provides.

1.2 The Role of Subsidies

Several two-sided platforms have been analyzed in the literature with typical examples including credit cards and computer operating systems (Armstrong, 2006; Evans, 2003). With credit cards, a payment card company provides a credit card to a cardholder. That creates an indirect network externality for every merchant who partners with that payment card company. The merchants will benefit from the larger potential customer base and will be more likely to offer that credit card to access that larger base of consumers. Similarly, an operating system developer provides their product to a customer. That creates an indirect network externality for application developers who target that operating system. The application developers now have a larger potential customer group and will be more likely to continue to target that operating system to access these customers.

In each of these instances, one side of the market is subsidized to coordinate the behavior of both. This is typical of two-sided markets as it helps the intermediary get both sides participating. For the payment card example, the cardholder receives the subsidy. The individual may use that card at little or no cost, and may even receive cash for using it. In the operating system example, the application developers pay little or no fees to target that operating system while the individual who purchased the operating system bears the majority of the cost.

If the USES functions similar to these platforms, it will have to coordinate employer and job seeker demand using strategic subsidies. Since the USES offers its labor exchange to employers and job seekers at no cost, additional subsidies (services) will need to be provided by the USES to coordinate employer and job seeker behavior and facilitate matching. These services would reduce the search costs of either job seekers or employers, encouraging their participation. Thus, because of indirect network externalities, the other group would then increase their participation.

For example, by providing Unemployment Insurance (UI) to a job seeker and requiring that person to register with the state employment service (SES), an indirect network externality may emerge for employers who recruit workers from the SES in that one more worker will be available. Similarly, as the SES provides additional services to job seekers such as aptitude testing, employment counseling, and skills training, the employers who recruit from that pool of workers will likely increase their participation because they will find more qualified candidates. Because this improves the efficiency of the labor market, the public internalizes part of that externality.

To that end, this paper will examine several different services provided by the USES, each of which could function as a strategic subsidy used to better coordinate employer and job seeker behavior. In order for the USES to be considered a two-sided market intermediary, the subsidy (service) to one group should increase the participation of the other. The subsidies to be investigated include UI benefits, aptitude testing, employment counseling, skills training and job search support. If the public labor exchange is a two-sided market, USES could shape labor policy around the strategic

subsidies that provide the greatest ability to coordinate employer and job seeker behavior.

1.3 The Impact on Policy

While the USES and SESA have been frequently analyzed in the literature, very little work has been done to investigate the aspects of the USES and SESA that are relevant to the multisided platform literature. Yet, whether the market it serves is one-sided or multisided carries significant implications for policy as well as the degree to which the USES can fulfill its mission to improve labor market efficiency through its SES partners.

If the SESA operate as an intermediary in a one-sided market, there is little the USES can do in terms of policy to alter the transaction volume (joint participation) of employers and job seekers in the public labor exchange. Levels of employment demand will follow the business cycle which will constantly impact the participation of employers and job seekers. This means that overall SES transaction volume would be subject to labor market forces rather than the SES being able to offset the swings of the labor market. Thus, employers would be more likely to participate during periods of lower unemployment when there are fewer job seekers available on the platform at that time. Conversely, job seekers would be more likely to participate during periods of higher unemployment when employers would be less likely to participate because they have fewer employment needs. However, if the SESA operate in a two-sided market, explicit or implicit subsidies could affect transaction volume and provide more freedom for the USES to fulfill its mission and develop transaction volume independent of labor market

conditions.

There are several other implications for policy if the SESA operate as an intermediary of a two-sided market. One implication is the relationship of the labor exchange with other federally funded workforce related programs such as UI and federally sponsored job training. Throughout the history of the USES, various policies have emphasized these programs differently, often creating a sense that some of these efforts compete with labor exchange activities. However, if the SESA serve a two-sided market, these other programs may function as subsidies that will be critical to optimize labor exchange transaction volume. Thus, these “competing” programs could actually be highly complementary and workforce development policy could be constructed in a manner that emphasizes and maximizes the complementary nature of these various programs.

This leads to the second implication: prioritized subsidization. USES and SES administrators must prioritize activities such as job seeker testing, employment counseling, vocational training and providing job search information to individuals. By viewing these activities through the lens of strategic pricing (subsidization) and two-sided markets, administrators can methodically prioritize these efforts with a view toward maximizing labor exchange transactions.

A final implication impacts how policymakers approach funding of the USES, SESA and related workforce programs. Each of the subsidies that encourage job seeker or employer participation is associated with different costs. At times, policymakers may be tempted to reduce those activities that are cost-intensive on one side of the market, not

fully understanding the impact that could happen to participation on the other side of the market. Similarly, when SES implementers are tasked with serving a population with reduced funding, a subsidy-centric understanding will help these individuals spend limited resources in the most strategic manner.

1.4 Testing the Hypothesis

Administrative data from the Utah Department of Employment Security (UDES),¹ later known as the Utah Department of Workforce Services, will be used to analyze the behavior of employers and job seekers and whether indirect network externalities exist and what role subsidies play. The results of this analysis will be analyzed alongside public labor exchange literature for consistency. Finally, the SES data from several states will also be analyzed in an effort to develop a more comprehensive understanding of the behavior of employers and job seekers as well as the role of subsidies in the U.S. workforce system.

¹ The Utah Department of Employment Security (Utah Department of Workforce Services) is the partner with the USES charged with administering the labor exchange in Utah.

CHAPTER 2

THE HISTORY OF THE U.S. EMPLOYMENT SERVICE

2.1 The Beginnings

The USES was formed on January 3, 1918 as part of a reorganization of the Division of Information within the Labor Department designed to accommodate production for World War I. However, there was little interest in retaining the U.S. Employment Service following the war as the economy boomed. When the Great Depression set in, Frances Perkins persuaded President Roosevelt to revitalize the service (Balducci, 1997).

The USES was subsequently established as a federal-state partnership in its current form by the Wagner-Peyser Act of 1933.² A report from the Employment and Training Administration in 1998 recounts the initial purpose of the public labor exchange as laid out in reports to the Senate and the House of Representatives in May, 1933:

To foster, promote and develop the welfare of the wage earners of the United States including juniors (youth) regularly employed;
To improve working conditions;
To advance their opportunities for profitable employment by regularly collecting, furnishing, and publishing employment information as to opportunities for employment;
For maintaining a system for clearing labor between the several States; and
For cooperating and coordinating the public employment offices

² 29 U.S.C. § 49 et seq.

throughout the country.³

For the first 2 years of its existence, the mission of the USES was to serve as a labor exchange focusing on reemployment services attempting to match unemployed workers with the job openings posted by employers (Balducci, 1997; Bendick, 1989). Because of the lack of private sector job openings during the Great Depression, the SESA were primarily used to provide recruitment services for the New Deal public works programs through the National Reemployment Service. The National Reemployment Service also developed a nationwide network of employment exchanges to service employers and job seekers until the SES offices were established (Haber & Kruger, 1964).

In 1934, the USES established its occupational research program designed to analyze industries, occupations, and workers in order to facilitate job placements. In 1937, the USES expanded this research to encompass SES operations and activities. The culmination of this work came in 1939 with the release of the *Dictionary of Occupational Titles* (Haber & Kruger, 1964).

As a federal-state partnership, the USES and SESA have always been funded to some degree by federal tax dollars that have been allocated back to states according to a legislated formula. For the first years of its existence, funding for the ES came about from a federal-state matching program. Economic historians appear to differ on the levels of contribution from the federal and state governments. Ruttenberg and Gutchess (1970) report that 50% came from the federal government and the other 50% from states.

³Fed. Reg. 63, 113 (June 12, 1998)

However, according to Adams,

...during the first years of operation under the Wagner-Peyser Act, 75 percent of [allocated] federal funds, as required by the original law, were distributed to cooperating states on the basis of relative size of population. This was changed after the coming of unemployment insurance to require semiannual combined budgets for insurance and employment service operations, although funds continued to be made available to the states under the Wagner-Peyser Act. (Adams, 1969, p. 27)

The USES was subsequently partnered with the UI program and administered by the employment security system with the passage of the Social Security Act (SSA) of 1935. The intent was to “mitigate the vagaries of cyclical unemployment that characterized the U.S. labor market” (Balducci, 1997, p. 458). Under the direction of the employment security system, the USES administered the work test for UI claimants, verifying that job seekers collecting UI benefits were actively pursuing employment (Balducci, 1997).

From the very beginning, UI activities dwarfed labor exchange operations. During 1938, 1939, and 1940, the SESA placed 2.7, 4.2, and 3.7 million job seekers in nonagricultural jobs while processing 9.6, 9.8, and 11.1 million initial UI claims and 22.7, 56.5, and 66.8 million continued claims, respectively (Haber & Kruger, 1964). In 1939, a presidential order merged the USES with the Bureau of Unemployment Compensation in the Social Security Board creating the Bureau of Employment Security. The USES was relegated to a division within this new organization (Haber & Kruger, 1964).

With the passage of the SSA, funding for the USES became linked to a tax on employer payrolls under Title VIII of the original legislation. The tax is imposed on

employers based on their payroll size and credited to the UI Administrative Account maintained by the U.S. Treasury Department. This tax was encompassed in the subsequent passage of the Federal Unemployment Tax Act (FUTA) in 1939 (OECD, 1999). In 1954, this tax became part of the Chapter 23 of the Internal Revenue Code (Adams, 1969).

Allocations to states from this tax took place according to Section 302(a) of Title III of the SSA. It instructs the Secretary of Labor to base allocations to states on “1) the population of the State; an estimate of the number of persons covered by the State law and the cost of proper administration of such law; and 3) such other factors as the Secretary of Labor finds relevant” (Adams, 1969, p. 165). Lump-sum grants were replaced by line-item budgeting on January 1, 1940 (Adams, 1969).

Shortly after the attack on Pearl Harbor, the labor exchange and UI programs were federalized and placed under the control of the Social Security Board (Haber & Kruger, 1964). By 1942, the USES administration was placed under the control of the War Manpower Commission with the goal of providing adequate labor for war industries (Ainsworth, 1991).

Prior to 1939, the USES only provided limited amounts of labor market information. However, with the onset of World War II, the USES began to provide more detailed descriptions of labor and skill shortages. This new information enabled the USES to begin serving employers and mobilizing the workforce during World War II (Haber & Kruger, 1964).

World War II and the years following brought substantial activity to the SESA

with placements totaling 12.2 million in 1944. In addition, the passage of The Serviceman's Readjustment Act of 1944, otherwise known as the G.I. Bill of Rights, provided a \$20 weekly unemployment allowance distributed through the SESA. Consequently, millions of veterans poured through SES offices from September 1, 1944 to August 31, 1949 and the Veterans Employment Service was folded into the USES (Haber & Kruger, 1964).

Following the war, states regained control of operations and emphasized serving the needs of returning veterans and civilian workers who were negatively impacted as the economy transitioned (Ainsworth, 1991; Balducchi, 1997; Bendick, 1989). Executive Order 9617 dissolved the War Labor Board and brought USES under the administration of USDOL. The USES was permanently transferred to USDOL in 1949 after an appropriations bill temporarily moved it back to the Federal Security Agency in 1948 (Janoski, 1990).

With the exception of complete federalized funding during World War II (1942-1946), this matching mechanism was in place until the passage of an amendment to the Wagner-Peyser Act in 1949. The amendment eliminated the federal-state matching mechanism for funding and directed FUTA taxes collected to cover all USES services (Ruttenberg & Gutchess, 1970). According to Adams, the matching mechanism was never in place following World War II:

The Congress did not revert to the former system of matching grants under the Wagner-Peyser Act as a means of financing the state employment services. From 1946 forward, these agencies were financed mainly from the proceeds of the Federal Insurance Contributions Act which provided for a payroll unemployment tax on employers. (Adams, 1969, p. 37)

2.2 The Foundational Period: 1947 – 1963

The Employment Act of 1946 focused the nation on the pursuit of full employment and overall economic improvement. The USES served as a key source of labor market information in this effort providing service to civic groups interested in economic development as well as the Council of Economic Advisors on the national level. Occupational analysis also continued and led to the second edition of the *Dictionary of Occupational Titles* (Haber & Kruger, 1964).

Toward the end of World War II, the USES conducted research attempting to estimate the impact of veterans returning home and entering the labor market. This research led to the implementation of the Six-Point Program launched in 1946 by the USES. The six points encompassed placement services, employment counseling, services to special applicant groups (i.e., veterans and youth), management service (assisting employers in job analysis and testing), labor market information, and community participation (cooperation with community organizations involved in employment planning) (Haber & Kruger, 1964). However, despite the implementation of this program, USES budgets were cut by the Truman administration between 1946 and 1949. One thousand administrative jobs were lost at USES headquarters in FY 1947 (Janoski, 1990).

In 1950, USES redirected SES labor market research to anticipating the impact of the Korean War on the U.S. labor market. In many ways the USES functioned as it did during World War II and attempted to identify the manpower needs of the defense industries and provide firms in these industries with preferential placement services.

However, the organizational restructuring that was so prevalent in the previous war effort never surfaced during the Korean War. In addition, with the exception of a few geographic areas, the transition from wartime to civilian structure was relatively smooth (Haber & Kruger, 1964).

The 1950s also marked the period where the ES began to solidify its operations and role. It expanded its focus to other special groups such as youth, the disabled, and older workers. In addition, a supplement of the *Dictionary of Occupational Titles* was released in 1955 further reflecting increased understanding of occupational characteristics in the labor market. Furthermore, management and organization of SES offices grew more sophisticated adopting standardization and metrics for service delivery. SES personnel were also able to undergo training in the university setting (Haber & Kruger, 1964).

In the 1950s and until FY 1962, allocation to states was heavily influenced by estimated transaction volume (applications, counseling, testing, and placements) multiplied by time factors. Thus, while openings declined over time, so did allocations, which also created an incentive for SES staff to seek out easy placements in order to increase funding (Adams, 1969).

Allocations could also come from infrequent distributions. The Reed Act of 1954 enables the possibility of additional allocations to SES offices if tax revenues collected under FUTA exceed the amount USDOL allocates for program administration (Chadwin, Mitchell, Hargrove & Mead, 1977). For example, during the late 1950s, when the UI fund exceeded its legal maximum, collected monies were distributed back to the states in

accordance with the Reed Act. One key outcome was the building of new employment security offices placing labor exchange and UI programs under the same roof. Many claim this co-location served to give rise to the image of the SES as the “unemployment office” (Haber & Kruger, 1964).

Throughout its early years, and even as late as 1964, the USES prioritized service to employers over job seekers. SES workers made conscious efforts to refer the most qualified workers to employers in an effort to encourage employers to continue to use the SES in the future. This approach was established during the Great Depression and after World War II when excess labor supply was substantial (Ruttenberg & Gutches, 1970).

However, despite prioritizing service to employers in employment service activities, the workload associated with processing of UI claims always exceeded the workload associated with employment service activities. The only exception was during World War II and in 1946 when numerous veterans poured in to SES offices (Ruttenberg & Gutches, 1970). Throughout the 1950s, approximately 17,000 SESA workers across the country focused on placements while 28,000 provided UI operations (Janoski, 1990).

By the end of the 1950s and into the early 1960s, the USES was coming under sharp criticism. In 1958, former Secretary of Labor James P. Mitchell accused the USES of being too preoccupied with processing UI claims. In 1960, the Senate Special Committee on Unemployment Problems described the USES as playing only “a minor role in placement of the American labor force” (Levitan, 1964, p. 6).

The USES appears to have made a concerted effort to respond to this criticism. During this same period of time, the USES shifted its activities away from processing UI

claims to placing job seekers. In 1958, 1 in 20 SES offices was devoted exclusively to the placement of job seekers. By 1963, almost 3 in 20 took on such a role (Levitan, 1964). In addition, in the late 1950s and 1960s, offices were established according to occupational grouping found in the labor market. For example, offices that specialized in manufacturing occupations were located close to industrial plants (Ruttenberg & Gutchess, 1970). Furthermore, in an effort to improve its image with employers, in the early 1960s, the USES attempted to make physical separations from labor exchange and UI staffs (Ruttenberg & Gutchess, 1970) in response to a 1960 report by the Senate Special Committee on Unemployment Problems (Nemore & Mangum, 1968).

2.3 The Manpower Years: 1963 – 1973

However, much of this reorientation was short lived. Probably the greatest signal that the USES would again have to shift course came early in the Kennedy administration. In his first Economic Message to Congress, President Kennedy directed the Secretary of Labor “to take necessary steps to provide better service for unemployed insurance claimants and other job applicants registered with the United States Employment Service” (Levitan, 1964, p. 7).

The Area Redevelopment Act of 1961 (ARA) required SES offices to provide unemployment information to the U.S. Department of Commerce for areas experiencing economic distress. The U.S. Department of Commerce would then use the information to determine federal assistance. In addition, the SESA assisted in the training efforts for the unemployed in economically depressed areas by selecting job seekers to be trained and

placing them in jobs once training was complete (Ainsworth, 1991).

This type of legislation proved to only be the beginning. In the 1960s three significant pieces of legislation directed a large portion of ES resources away from its established labor exchange activities. The Manpower Development and Training Act of 1962 (MDTA), the Vocational Education Act of 1963, and the Economic Opportunity Act of 1964 (EOA) focused the SESA on job training and human resource development activities. The EOA was actually part of the War on Poverty legislation established in 1964 that led to a reorientation of the SES priorities. The SESA would now seek out the disadvantaged rather than waiting for them to come to the SES to apply for services (Clague & Kramer, 1976). By 1965, the SESA concentrated much of their efforts on low-income and disadvantaged workers (Ainsworth, 1991).

The primary focus of the MDTA emphasized retraining experienced workers displaced by automation and technological change. However, the MDTA had several other objectives, many of which were at odds with the existing USES approach of providing the best applicant for a job opening. The MDTA attempted to place the unemployed in jobs as much as possible, improve the skill level of the labor force and alleviate poverty (Clague & Kramer, 1976). In order to fully comply with these objectives, the USES had to adopt an entirely new approach to its operations and turn its local offices into “manpower service agencies” (Levitan & Mangum, 1967). This new emphasis is evident in the words of Louis Levine who assumed the role of USES Director in 1962:

[The USES] shall not operate merely as a system of labor exchanges but must take on expanded responsibilities as a manpower agency concerned

with all aspects of manpower. Each local office must serve as the local community manpower center and, beyond that, must also function in a strongly-linked nationwide network of offices operating to meet national manpower purposes and goals. (Nemore & Mangum, 1968, p. 8)

This new approach translated into different performance goals. For instance, the SESA had to follow a rule where one-third of placements involved less qualified job seekers (Clague & Kramer, 1976). Frank Cassell, who became administrator of the USES early in 1966, described the change in mission from “screening out” to “screening in” (Levitan & Mangum, 1967, p. 8).

The Vocational Education Act of 1963 was designed to prepare noncollege-bound young adults for occupations requiring increased technical knowledge. The SESA had to both approve vocational training programs and refer qualified job seekers to them (Clague & Kramer, 1976). The law also required the SESA to provide information on occupational trends in order to guide curriculum development and inform course counseling (Adams, 1969).

The Economic Opportunity Act of 1964 (EOA) provided funds that led to the creation of several programs designed to increase the employability of disadvantaged job seekers. These programs include the Community Action Program, Job Corps, Neighborhood Youth Corps, Operation Mainstream, Adult Basic Education, and the Work Experience Program (Clague & Kramer, 1976).

For Community Action Programs, the SESA would provide manpower services such as labor market information, “manpower planning, counseling, testing, placement and related services” (Adams, 1969, p. 198). For the Job Corps and the Neighborhood Youth Corps, the SESA would recruit and screen applicants (Adams, 1969).

Operation Mainstream began in FY 1967 and was intended to aid unemployed workers over the age of 55 who lacked in-demand skills by placing them in unsubsidized employment. While this program was typically sponsored by Community Action Agencies (CAA), the SES offices were called upon to provide the placement services when the CAA were unable to do so (Claque & Kramer, 1976).

Amendments to the EOA in 1966 and 1967 brought about the additional programs such as New Careers, Special Impact, and the Concentrated Employment Program (CEP) (Claque & Kramer, 1976). The CEP was launched in late summer of 1967 as an effort to streamline and integrate overlapping manpower programs. The Community Action Agencies served as the prime sponsors of manpower projects while the SESA would deliver services such as testing, counseling, referral to training, job placement, and follow-up (Claque & Kramer, 1976).

In 1965, Human Resources Development (HRD) was implemented when the USDOL perceived that existing MDTA programs were still not reaching the disadvantaged unemployed worker. HRD reorganized a local employment office into “employability development teams” giving each client access to all services. The client was required to continue the relationship with the team until the desired objective was obtained (Ruttenberg & Gutchess, 1970). HRD also affected a budgeting change in FY 1968. Not only were SESA required to develop localized plans to receive funding, but these plans had to be set within the context of HRD (Nemore & Mangum, 1968).

HRD became a key practice of the Work Incentive Program (WIN) (Ruttenberg & Gutchess, 1970) that was created by a 1967 amendment to the Social Security Act. This

amendment required mothers with children aged six or older who were receiving aid under Aid to Families with Dependent Children (AFDC) to register with the SESA and be available for work or training. The WIN program did not get underway until FY 1969 (Claque & Kramer, 1976).

Amendments to the MDTA in 1968 directed the USES to utilize technological advances in the job matching process. The USES was to incorporate electronic data processing system and telecommunications systems (Claque & Kramer, 1976). In 1968, the first job bank was introduced to the SESA in Baltimore. A job bank is a computerized system of collecting information regarding job openings and generating a printout made available to local SESA offices. By October 1969, the success of this initial job bank system led to the development of job banks in five additional cities (Ruttenberg & Gutchess, 1970).

In addition, the federal government has also occasionally supplemented USES funding through other federal programs connected to USES operations. In the 1960s this supplement increased from 1% to 27% of USES funding (Ruttenberg & Gutchess, 1970). Overall, funding for ES operations soared from 1961 to 1967 due to removal of the Unemployment Trust Fund from federal budget negotiations in 1960. However, fiscal pressure imposed by the Vietnam War forced the Unemployment Trust Fund back into the federal budget (Janoski, 1990).

Several policy changes introduced by the Nixon administration led to substantial restructuring of USES operations. The new administration dissolved the Bureau of Employment Security and replaced it with the Unemployment Insurance Service (UIS)

and the United States Training and Employment Service (USTES). The UIS administered UI while the USTS took over responsibility of manpower training programs as well as the employment service activities (Ruttenberg & Gutchess, 1970).

Insufficient reporting in the WIN program led the Nixon Administration to have the Department of Health, Education, and Welfare and the Department of Labor to sift through AFDC rolls to locate employable persons. The SESA would then attempt to place these individuals to training or employment. While in some states this forced cooperation created substantial conflicts between the two departments, in most states the two departments worked well together in this task. However, in some instances, placement of WIN clients actually replaced labor exchange activities directed toward UI claimants (Claque & Kramer, 1976).

In addition, the administration revamped the CEP directing the CAAs to concentrate on overall management of service delivery while job-getting activities of various manpower programs were consolidated under the USES. The SESA also took responsibility for ensuring clients received manpower services (Claque & Kramer, 1976). This was the result of a revision of CEP guidelines in 1969 (Ruttenberg & Gutchess, 1970).

2.4 Comprehensive Employment and Training Act

(CETA): 1974 – 1982

By the end of the 1960s, the plethora of manpower programs and their inability to address local needs developed into the “new federalism” policy of the Nixon

Administration. New federalism maintained that the federal government is the best source of tax revenue but that local governments are in the best position to manage programs to respond to local needs. Despite an initial failure to pass this type of legislation, the administration eventually garnered enough support to see the passage of the Comprehensive Employment and Training Act (CETA) in 1973.

Under CETA, local governments would apply for revenue from the federal government and then sponsor their own unique mix of manpower programs tailored to their geographic area. However, the federal government retained much administrative power by being able to review local manpower plans and monitoring overhead and administrative costs (Claque & Kramer, 1976). Prior to CETA, the federal government was engaged in 10,000 separate contracts with local program operators (Franklin & Ripley, 1984). CETA divested much of the job training efforts away from the USES and re-established the labor exchange activities as the primary mission of the USES (Balducchi, 1997).

Under CETA, planning, administration, and decision-making were decentralized and placed under the control of local and state governments in the form of Prime Sponsors. In addition, CETA created Manpower Advisory Councils (MACs) which were authorized to make recommendations regarding goals, procedures, and plans; however, Prime Sponsors served as the authoritative decision makers (Franklin & Ripley, 1984). While other similar groups were incorporated through amendments to CETA, such as youth councils and Private Industry Councils, SESA involvement was generally restricted to MAC participation. However, many members of Prime Sponsor staff perceived the

SESA as insensitive to needs of CETA clientele and too focused on labor exchange operations (Franklin & Ripley, 1984). Thus, with the advent of CETA, SESA participation under Title I in training activities FY 1975 declined about 30% from FY 1974. In addition, 20% of Prime Sponsors completely discontinued the use of SESA nonlabor exchange services. Consequently, SESA manpower-related staff was reduced about 25% from FY 1974 to FY 1976. An even greater percentage of Prime Sponsors reduced the overall level of services provided by the SESA (Franklin & Ripley, 1984).

While SESA witnessed a decreased role in CETA efforts, SES offices sought to improve relationships with employers in the 1970s through the use of the Employer Services Improvement Program (ESIP). This program established Employer Advisory Committees (EACs) that would coordinate with task forces comprised of personnel from local SES offices designed to improve services to employers and subsequently increase employer usage of ES services. This program replaced the Employer Service Representatives (ESRs) which served in a relatively small role during the MDTA years. In addition, the USES national office issued a directive in 1975 admonishing SES offices not to divert SES staff to UI activities. It is not clear to what degree this directive was actually followed (Chadwin et al., 1977).

Throughout the 1970s, the allocation of funding to SESA programs experienced some restructuring as well. From FY 1962 and continuing until FY 1974, allocation of

FUTA⁴ dollars was based upon perceived need through the use of the ratio of SES staff to the size of the labor force it served (Adams, 1969; Chadwin et al., 1977). However, in FY 1975 and FY 1976, The Balanced Placement Formula (BPF) was introduced to allocate funds to SES offices. This formula was replaced by the Resource Allocation Formula (RAF) in FY 1977 (Chadwin et al., 1977). The RAF included a 15% weight for “external factors” and “reflects national policy and emphasis through the measure used and the weights assigned to them” (Chadwin et al., 1977, p. 183).

2.5 Job Training Partnership Act (JTPA): 1983 – 1998

The 1980s brought about a major shift toward increased decentralization of the federal-state partnership, placing more control of SES operations under state control and attempting to simplify SES funding. The Job Training Partnership Act of 1982 (JTPA) amended the Wagner-Peyser Act enabling states to customize both job training efforts for the disadvantaged as well as their ES labor exchange programs through federal funding.

JTPA further required partnership between job training efforts with SES operations. As part of its structure, JTPA provided both training and job placement services. However, these services, while in some sense duplicative of SES operations, were required to be coordinated with the local SES plan. In many instances, the intended cooperation took place between JTPA and the SES, even to the point of co-location of programs. In other instances, competition emerged as JTPA programs sought after the

⁴In 1970, incoming funding from FUTA represented 3.1% of the first taxable wages paid with 2.7% funding insurance benefits and .4% funding administration of both the UI and ES programs (Ruttenberg & Gutchess, 1970).

“same clients, job leads, employer contacts, and placement credits” as the SES (Ainsworth, 1991, p. 11).

Another substantial impact brought about by JTPA legislation was the changing of the formula used to fund SES operations from the FUTA tax, emphasizing the role of unemployment indicators (Balducci, 1997). Consequently, funding for state administration of the labor exchange was predicated on the policy assumption that increases in unemployment will be associated with increases in SES activity. Approximately two-thirds of the distribution of these taxes back to states was based on the state's share of the nation's civilian labor force and approximately one-third was based on the state's share of the nation's number of unemployed individuals. Thus, if employment growth stagnated or declined while unemployment increased relative to that of other states, a state could reasonably expect an increase in ES funding.

While the funding allocation formula was altered under JTPA, overall revenue for SES operations was reduced substantially in 1982 to \$610 million from \$675 million in 1981. Funding in subsequent years continued to decline on an inflation-adjusted basis. This funding decline largely contributed to the reduction of 600 SES offices from 1980 to 1988 (Ainsworth, 1991).

In the early years transitioning to JTPA, the Secretary of Labor conducted four public hearings in 1986 in order to obtain stakeholders' assessment of the role played by the public labor exchange and identify the most appropriate role moving forward. Respondents overwhelmingly asserted its value but requested a more streamlined structure focused more on labor exchange activities with greater emphasis on both the

accountability of service provision and the automation of labor exchange information provision.⁵

Improved integration of services was facilitated by the Economic Dislocation and Worker Adjustment Assistance Act (EDWAA) of 1988 that sought to give states more control in the development of labor exchange services to dislocated workers and increased ES participation (Ainsworth, 1991). EDWAA also sought to facilitate greater coordination between the SESA and JTPA in serving dislocated workers.

In addition, the SESA continued to increase usage of automation technology. In 1989, the Interstate Job Bank System, the evolution of the first job bank in 1968, received 122,400 job openings with 40% representing professional, technical, and managerial jobs (Ainsworth, 1991).

The decentralization and restructuring of the SESA throughout the 1980s and early 1990s ultimately led to a GAO finding in 1991 that “wide variations in local office performance indicate that active assistance from Labor may help to improve effectiveness of their programs” (Balducci, 1997, p. 470). GAO further recommended “the Secretary of Labor work with the states to identify and solve problems affecting ES program quality and performance” (Balducci, 1997, p. 470).

Policymakers at both the federal and state levels sought to respond to GAO's recommendation to revamp the nation's workforce development system. In 1994, President Clinton proposed the Reemployment Act. The intent of this bill was to facilitate service provider collaboration and competition in a workforce system that was

⁵ Fed. Reg. 63, 113 (June 12, 1998)

substantially fragmented.

While the bill never passed, its objectives were adopted by USDOL. These new objectives focused on improved customer service that integrated technological improvements in service provision, increased labor market information to assist in job search and preparation, and the development of “One-Stop Career Centers” (OSCCs) designed to be delivery hubs of streamlined workforce development services (Balducci, 1997). OSCC state plans submitted to USDOL for grants had to demonstrate integration of services from ES, UI, JTPA (Title II and Title III), Senior Community Service Employment Program, and Veterans Employment and Training Services (OECD, 1999).

In addition, a renewed emphasis was placed on outcomes of SES customers, including customer satisfaction (Balducci, 1997). Performance and accountability measures such as these received substantially more attention during this time largely due to the legislative impact of the Government Performance and Results Act of 1993 (OECD, 1999). In 1998, USDOL released a draft of performance measures for comment based on input and trials in SES offices and one-stop centers across the country.

This focus on performance was part of a larger “ES Revitalization Work Plan” launched by USDOL in 1994 aimed at improving information and services to customers.

This plan established three tiers of service to customers:

Tier I – Self-Help (resource center and automated self-help system containing information on jobs, and job search assistance);

Tier II – Basic Intervention (basic assessment and services, such as referral to jobs, job search assistance, and training);

Tier III – Intensive Services (job seekers could be served by ES or referred to other workforce development programs.) (Balducci, 1997, p. 472)

The Clinton administration also placed great emphasis on labor market information and fostered America's Labor Market Information System (ALMIS). The goal of this effort is to provide one-stop access to a wealth of labor market information to SES customers. In many ways, innovations in technology and dissemination in the 1990s were utilized to deliver this information.

At the same time, the Interstate Job Bank was replaced with America's Job Bank (AJB). In 1995, AJB became fully accessible on the Internet (Balducci, 1997). By 1997, virtually every SES had linked their job openings databases with AJB (OECD, 1999). By the middle of 1998, AJB contained approximately 712,500 job openings (OECD, 1999).

2.6 The Workforce Investment Act (WIA): 1998 – 2014

Many of the objectives that were designed to integrate services eventually became legislated with the 1998 amendment to the Wagner-Peyser Act entitled the Workforce Investment Act (WIA). Under WIA, the governor of a state identifies a state agency to administer Wagner-Peyser funds and workforce development services within the context of OSCC and according to a 5-year strategic plan.⁶

In August 2000, USDOL published a set of proposed labor exchange performance measures tailored to WIA with a target implementation date of July 1, 2001.⁷ Part of this new performance measure system established a linkage to UI wage records. In 2001, trial

⁶ WIA, P.L. 105-22

⁷ Fed. Reg. 65, 157 (August 14, 2000); Fed. Reg. 66, 105, (May 31, 2001)

implementations of these measures led USDOL to conclude that traditional method of follow-up of job seekers placed through the SES significantly understated the actual number. This finding led USDOL to postpone implementation of these new performance measures until July 1, 2002 in order to allow each state time to implement a UI wage record matching system for SES performance reporting.⁸ The four performance measures implemented were: Job Seeker Entered Employment Rate (EER), Job Seeker Employment Retention Rate (ERR) at 6 months, job seeker customer satisfaction, and employer customer satisfaction (USDOL, 2002). The culmination of these performance changes led to a “zeroing out” of all SES data such that new reporting could begin on July 1, 2002. Thus, continuous historical analysis of administrative data is not possible past this date.

2.7 The Workforce Innovation and Opportunity Act

(WIOA): 2014 – Present

On July 22, 2014, the Workforce Investment Act of 1998 was amended by the Workforce Innovation and Opportunity Act (WIOA). While the USES falls within the scope of this legislation, the focus of this act is to improve federally funded job training programs by making training more accessible to clients than previously, more relevant to local employer needs and evaluated on a common scale across the country.⁹

⁸ Fed. Reg. 66, 109 (Jun 6, 2001)

⁹ H.R.803, 113th Congress

2.8 Conclusion

From its inception in 1918 through the present, the USES has played a central role in the U.S. public workforce system. While a key activity has been administering a matching service between employers and job seekers, the USES has also been tasked with overseeing the development of labor market information, administering aspects of the UI program and providing or partnering with job training efforts.

Within this ecosystem, the USES has at times fought to maintain its employment-matching identity. This can be seen as the USES tried to prevent SESA from being labeled the “unemployment office” in the 1950s to its tenuous relationship with job training and job training partners, which often served to displace its labor exchange activities.

Yet, if the USES is seen as an intermediary of a two-sided market, activities such as UI benefits and job training need not be seen as competing with labor exchange activities but potentially complementary. As will be seen in subsequent chapters, UI benefits play a significant role in ensuring a labor pool is available when employers need workers. Similarly, employment counseling and vocational training improve the welfare of both employers and job seekers, encouraging both sides to participate in the labor exchange. Thus, the public workforce programs provide an integrated implementation that brings both employers and job seekers to the public labor exchange.

CHAPTER 3

LITERATURE REVIEW

3.1 Introduction

Although the USES functions as an intermediary in the labor market, the intermediation theory literature, and by extension the multisided platform literature, has evolved almost independently of the Public Employment Service (PES) literature. Consequently, several evaluations of the PES have omitted aspects of intermediation and multisided platform theory. Similarly, the multisided platform literature has investigated several industries and intermediaries, but the USES has yet to be analyzed through this framework.

This paper seeks to provide an initial analysis of the USES from the multisided platform perspective and compare the results with that of the existing PES research. In addition, this paper seeks to identify the subsidization strategies used by the USES to exploit any indirect network externalities present. To provide a background for this investigation, this chapter presents the intermediary literature context surrounding and supporting multisided platform theory. In addition, a review of the existing PES research is provided as well.

3.2 Intermediaries in the Literature

Multisided platform theory integrates several existing bodies of research including that of intermediation, networks, search markets, two-sided matching, externalities, and strategic pricing. In order to provide context and a review of the multisided platform literature, this review will begin with the simplest aspects of intermediation and gradually incorporate the other areas of research.

3.2.1 The Basic Intermediation Role: Reselling

Understanding the multisided market intermediary's role begins with examining the intermediary in the simplest of environments: reselling. In these instances, an intermediary buys with the intention of reselling for a profit. This role implies the intermediary will serve as a dealer who maintains inventories of cash and a traded good in a continuous market where asynchronous trading occurs during continuous intervals of time (Garman, 1976).¹⁰

Prices are central to this role as the intermediary can help clear markets similar to the Walrasian auctioneer, even though the prices for the buyers and sellers may not represent a Walrasian outcome (Spulber, 1996b). Yet, prices only represent a portion of agents' transactions costs. For example, even in the simplest of theoretical reselling roles, agents must incur costs when determining optimal prices. Intermediaries, on the other hand, can reduce these costs by selecting an optimal pricing structure based on the

¹⁰In a call market, synchronous trading occurs at preestablished discrete times.

price signals of buyers and sellers (Spulber, 1996a).

3.2.2 Value Addition

However, because the intermediary must maintain an inventory in this simplest case, this basic intermediation role may not be profit-maximizing for the intermediary nor for the agents involved (Garman, 1976). In fact, this is one reason why final prices may not represent a Walrasian outcome. With an inventory, the intermediary now incurs maintenance costs which eventually create a bid-ask spread in prices (Spulber, 1996a). While the intermediary may be able to optimize prices due to its willingness to hold inventories for periods of time that improve profits (Johri & Leach, 2002), the intermediary is now faced with the need to optimize inventory size (Shevchenko, 2004) and risk aversion (Ho & Stoll, 1981). See Amihud and Mendelson (1980, 1986) for greater discussion on the impact of the bid-ask spread on asset prices when intermediaries maintain an inventory.

Thus, it may be optimal for all involved for the intermediary to add value to existing goods and services by incorporating other inputs to produce a similar but different good. Winkler (1989) notes this is the predominant view of previous financial intermediation models and serves as the reason why intermediaries never developed a unique role in microeconomic theory.

In a simple example, the intermediary may sell reputation by choosing to resell only high quality goods and services (Biglaiser, 1993). However, adding other types of value may remove the need to manage an inventory altogether. One type of added value

could come through verification services. Buyers and sellers face asymmetric information prior to completing a transaction. This translates to new costs and moral hazards each would face that the intermediary can reduce (Spulber, 1996a). Li (1998) demonstrates that quality verification services provided by intermediaries improve agent welfare even though these intermediaries have chosen not to engage in production. Similarly, quality verification and monitoring intermediation can also apply to services, like loan contract monitoring (Diamond, 1984).

At times, the value addition may simply be the possibility of a transaction taking place when buyers and sellers fail to come to an initial agreement on prices on their own. Thus, the intermediary performs the role of bargaining mediation. See Yavas, Miceli, and Sirmans (2001) for a review of the literature on bargaining through intermediaries.

Bargaining mediation can be extended to include brokerage activities. When an intermediary serves as a mediator, the price preferences of the buyer and seller reduce the likelihood of a transaction. However, when an intermediary serves as a broker, the buyer and seller do not have to reach a price agreement. The broker may even “tax” or subsidize a transaction to facilitate the exchange (Myerson & Satterthwaite, 1983; Spulber 1996a). Export intermediaries may also function as brokers (or matchmakers) (Peng & Ilinitich, 1998).

3.2.3 Search Costs

As the theoretical intermediary example grows in more detail, new costs emerge for the agents: search costs. In a more detailed scenario of this basic role, agents

maintain the option of direct exchange in a decentralized, noncoordinated market alongside the intermediary. Agents' likelihood to use the intermediary will be determined by the efficiency of the decentralized market. If buyers and sellers have to undertake a time-consuming, costly search process to find each other, using the intermediary becomes more profit-maximizing.

These new costs lead to the evolution of the intermediary's role as the intermediary seeks to increase his or her own profit by optimizing the search costs of the agents. In some respects, this can simply mean reducing the time spent searching for a trading partner. Rubinstein and Wolinsky (1987) present a model where some agents within the economy choose to serve as intermediaries ("middlemen") instead of buyers and sellers when time-consuming matching inefficiencies provide the opportunity for positive profits from arbitrage.

Intermediaries in the Rubinstein and Wolinsky (1987) model extract a portion of the buyers' and sellers' surplus in exchange for shortening their waiting time for a transaction. This implies that the profitability of intermediaries (transactions costs of the buyers and sellers) is based on the impatience of the other agents. Since the intermediaries are just as impatient as the buyers and sellers in this model, profitability primarily requires the intermediary to be more efficient in creating contacts than what the agents can find through decentralized search. In other words, the matching technology of the intermediary must be more efficient than the latent matching technology of the decentralized market.

In order for the agents to evaluate search costs, they must also have a valuation

assigned to the traded good or the transaction. The role of valuation as it relates to search is explored by Cosimano (1996). In this scenario, buyer and seller roles are determined endogenously, as is the choice for agents to trade directly with each other, trade through intermediated services, or even become nonparticipants. The matching technology is completely random and each agent is allocated one unit of the traded asset in addition to one unit of transferable utility (for compensation) to facilitate negotiation in the exchange. The resulting surplus, divided equally between buyer and seller, serves as the solution to a Nash bargaining game. Buyers engaged in direct trade incur search (opportunity) costs while sellers incur marketing (opportunity) costs. In this model, agents are not guaranteed a match unless they choose to trade with the intermediary and incur a transaction (opportunity) cost. The intermediary establishes a profitable bid-ask spread that clears the market. The agents' choice to trade directly or with the intermediary is determined by the lowest opportunity cost. As a result, those agents with extreme valuations, who have the most to lose from direct trade, choose to trade with the intermediary while those agents with valuations at the margin choose direct trade instead.

3.2.4 Matchmaking

When not maintaining an inventory, the role of the intermediary can be generalized at this point to one of matchmaker who brings two sides of the market together alongside a decentralized environment where direct exchange (or matching) could take place. This role could be active or passive. In the passive sense, the intermediary administers a marketplace where both sides of the market meet. In these

instances, intermediaries passively facilitate transactions by merely informing buyers and sellers of current prices (information gatekeeping) or providing a means for buyers and sellers to easily find each other. A firm or a commodity exchange, for example, can function as an information gatekeeper as in Baye and Morgan (2001).

Whether active or passive, this matchmaking role intersects with an entire segment of the literature focused on two-sided matching in a largely decentralized environment. The majority of the earlier job search literature reflects a decentralized environment as seen in the surveys by Lippman and McCall (1976a, 1976b).¹¹ Similarly, the more general two-side matching models, like the “marriage market,” exhibit decentralized characteristics. While a matchmaker is implicitly present in the two-sided matching models or even exists as an economic institution (Eeckhout & Munshi, 2003), the outcome does not deviate from a decentralized environment. See Roth and Sotomayor (1990) for a review of the two-sided matching literature.

The literature reflects several instances of matchmaking intermediaries intersecting with two-sided matching. In Bloch and Ryder (2000) agents decide upfront to either form an exclusive agreement with the intermediary or engage in decentralized search according to a random meeting process. The choice of whether to use the intermediary or not is governed by the intermediary's pricing scheme. In Yavas (1994), search intensity of the agents is endogenously determined and ultimately influences

¹¹According to job search theory, an optimizing job seeker (employer) establishes a reservation wage (productivity level) policy such that the first qualifying offer will be selected from a known or unknown distribution (with sampling costs). The job seeker (employer) subsequently undergoes a search process for an employer (job seeker). A successful match between an employer and a worker consists entirely of a successfully negotiated wage.

whether or not they use the intermediary. By making the search cost decision endogenous, it becomes possible to identify the kinds of agents who choose to utilize the intermediary. Consequently, Yavas finds that sellers with high valuations and buyers with low valuations drop out of the search market and choose to work with an intermediary instead, where their search costs equal zero.

3.2.5 Matching Technology and Externalities

Both Cosimano (1996) and Yavas (1994) link intermediary usage to search costs and valuations of the transaction or time. At the heart of the agents' decision lies the matching technology of the intermediary versus that of the decentralized market. Yet, the type of matching technologies at work, and even the agents' decisions themselves lead to externalities experienced by the other agents.

This integration of the concepts of matching technology and externalities are brought together in Diamond and Maskin (1979) and Mortensen (1978, 1982). In Diamond and Maskin (1979), two types of meeting technologies are portrayed that are drawn upon frequently by the literature. One technology is the quadratic, where the number of matches increases with the square of the number of searchers. The other technology is the linear, where the number of matches increases in linear fashion with the number of searchers.

The market meeting technology subsequently offers the potential for both good and poor matches and may yield both positive and negative externalities (Diamond & Maskin, 1979, 1981; Mortensen, 1978, 1982). For example, as more agents search, it is

possible all agents benefit from the increased ease of finding a match; however, as matches occur, there are fewer agents available for a match. Additionally, an unsuccessful match may emerge from spatial limitations between agents, incomplete information (Mortensen, 1978), or inefficient search intensities based upon agent expectations (Mortensen, 1982). An unsuccessful match may induce agents to either reconvene the search process or even force some agents to leave the market altogether (Diamond & Maskin, 1979). When decentralized markets exhibit inefficiencies or failures such as these, intermediaries emerge to internalize these externalities.

Recalling Yavas (1994), buyers (employers) and sellers (job seekers) search in a market with a matching technology similar to the quadratic model of Diamond and Maskin (1979) except that the positive externalities emerge from the increased search intensity of the agents and not necessarily from the number of agents searching. However, despite search intensity, the possibility exists that one agent will not be matched with another. The intermediary's role, therefore, serves to reduce the uncertainty of the matching process and internalize the search intensity externalities.

Bloch and Ryder (2000) consider a “marriage market” model where an agent's utility from a match depends entirely on the index of attractiveness of the “spouse.” Thus, no utility transfers (compensations) are allowed between agents when a match occurs. In decentralized search, agents meet randomly at specified periods over an infinite time horizon and incur search costs (represented as a discount factor on the gains from marriage). Bloch and Ryder (2000) further demonstrate that agents on both sides (male and female) of the market can be clustered into subintervals in which all agents

adopt the same threshold strategy. This market segmentation result is similar to Burdett and Coles (1997) where sorting externalities arise.

However, Bloch and Ryder (2000) also include an intermediary (marriage broker) who replaces the random matching process by establishing exclusive agreements with agents and proposes to match agents according to their identity (attractiveness). In one scenario, the matchmaker charges each agent a fixed fee; in another, the matchmaker charges a commission after the quality of the agent has been revealed.

The exclusive agreement between one agent and the intermediary creates externalities for the other agents. The choice of whether or not to use the matchmaker affects the outcome of the agent's potential partner as well as those engaged in decentralized search.

This exclusive agreement between agents and the intermediary combined with the pricing scheme adopted by the intermediary affects the number of equilibria generated within the model. A unique participation equilibrium emerges when all agents are assessed a fixed transaction fee; however, only agents of higher quality utilize the intermediary. Multiple equilibria exist when agents are assessed a commission; only agents of lower quality use the services of the intermediary.

3.2.6 Competition and the Role of Market Share

As can be seen above, both positive and negative externalities arise during the matching process. Nevertheless, the impact of the externalities is determined by the market share of the intermediary. In the Yavas (1994) model, agents that choose to trade

directly experience positive externalities through decreased search costs: The intensity needed to find a match diminishes with a smaller pool of possible agents that have similar valuations. Yet, the choice to utilize an intermediary as well as the direction of the intermediary's welfare effect hinges on the efficiency at which the market operates (the matching technology) and the size of market share possessed by the intermediary.

Also, recalling Cosimono (1996), the optimal bid-ask spread of the intermediary is positively related to the matching costs of the intermediary—the costs of matching are passed on to the agents. However, in Cosimano (1996), the matching costs are negatively related to the market share of the intermediary. Thus, the intermediary can establish a bid-ask spread to influence market share to achieve optimal profitability.

3.2.7 Indirect Network Externalities

However, externalities and market share can also be a function of competition among intermediaries. In Yavas (1994) and Bloch and Ryder (2000) only one monopolist intermediary exists. However, Caillaud and Jullien (2003) investigate the equilibrium market structures and subsequent (in)efficiency characteristics that result when matchmaking intermediaries compete against each other in a Bertrand game with users who form either exclusive or nonexclusive (multihoming) agreements and exercise price discrimination based upon identity and usage. These nonexclusive agreements consequently generate indirect network externalities that foster a “chicken and egg” problem for the intermediaries within a context of two-sided market (Rochet & Tirole, 2004, 2006). To attract buyers, the intermediaries must possess a large base of sellers.

However, a large base of sellers requires the ability to provide a large base of buyers. This dilemma leads to various pricing strategies to get both sides on board. Evans (2003) identifies the entry and competitive strategies firms use to internalize the externalities in multisided platform (intermediation) industries where this “chicken and egg” problem surfaces.

Caillaud and Jullien (2003) like Caillaud and Jullien (2000) find that efficient equilibria exist in both the exclusive or nonexclusive environments. However, in the exclusive environment, the Bertrand game gives way to monopolization as profits disappear. In the nonexclusive environment, inefficient equilibria also exist with positive profits where intermediaries influence users to follow multihoming strategies in order to exploit the network externalities. Inefficient equilibria may generate the highest profits.

The ability of intermediaries to exploit indirect network externalities with pricing schemes is further explored in the literature discussing competition between marketplace administrators, platforms or networks. The theory of platform industries, or multisided markets, actually extends intermediation theory. According to Evans (2003), multisided platforms are a special class of intermediaries that “coordinate the demand of distinct groups of customers who need each other in some way” (Evans, 2003, p. 191). Examples of platforms analyzed in the literature include credit cards, resellers, telecommunication networks, media market advertising, matchmakers, marketplaces, and complementary software products (Armstrong, 2006).

Networks can be construed as a type of platform. Networks organize agent interaction differently through the use of links that connect various nodes throughout the

system. Since service delivery is contingent upon several nodes, high complementarity exists between agent interactions.

Rochet and Tirole (2004, 2006) define multisided markets by drawing a distinction between price level and price structure governing two or more sides of a market. In this instance, price level reflects the total price charged by the platform to the different sides whereas price structure reflects the allocation of the total price between buyer and seller.

In a one-sided market with a buyer, intermediary, and seller, the intermediary cannot change the volume of transactions by altering the price allocation between the buyer and seller since transaction volume is completely dependent on total price level. In fact, the Coase Theorem states that in a world with established and tradeable property rights and no transaction costs or information asymmetries, the negotiated outcome will be Pareto efficient.

In multisided platform markets, the Coase theorem no longer applies and the end-user does not internalize the welfare impact on other end-users of his use of the platform. More importantly, when the total price level is held constant, different allocations of price to the buyer and sellers will alter the total volume of transactions. This structure can lead the intermediary to subsidize one side of the market to capture the other side(s). Pricing thus becomes highly strategic, especially when one or more sides of the market follow a multihoming strategy. Discussions of competition under this framework and the subsequent network externalities can be found in Katz and Shapiro (1985, 1994), Rochet and Tirole (2002a, 2002b), Hagiu (2004), and Nocke, Peitz, and Stahl (2004). Armstrong

(2006) provides a comprehensive view of the multisided literature.

Damiano and Li (2003) assert previous multisided platform competition literature places great emphasis on network externalities and assumes homogeneous agents. This tends to lead the analysis toward a model with a single, dominant marketplace. However, by allowing for heterogeneity in agents, Damiano and Li (2003) enable the sorting phenomenon to emerge. Competing marketplaces utilize pricing structures to facilitate the sorting process in order to survive. However, the resulting outcome becomes less efficient than a two-price monopolistic structure. This is consistent with Evans (2003) who notes that marketplace administration intermediation takes place within a multisided market by definition. Participants are much more likely to utilize the market if a large number of agents already do. This leads to concerns of “creaming,” where one exchange is able to attract more preferred agents than another.

3.2.8 Conclusion

A review of the multisided platform literature reveals a broad basis of support from a variety of existing areas of research. What also is clear is that intermediaries play various roles depending on the markets they serve. Furthermore, it is often the case that the type of market dictates to what degree agents will use the intermediary. If the market is one-sided and the intermediary has a superior matching technology compared to the decentralized market, the notion of search costs and valuations have great explanatory value to the utilization of intermediaries. However, if the market is multisided, indirect network externalities exist and the intermediary has the flexibility to adjust price

allocation to influence transaction volume.

It is here where USES policy could be informed. By understanding the multisided platform nature of the public labor exchange, better labor exchange policies can be developed.

3.3 The Public Employment Service in the Literature

3.3.1 Introduction

In contrast to the largely theoretical nature of the intermediation literature, the PES literature consists of a small mix of empirical and theoretical studies that evaluate the labor exchange activities of the PES from two primary vantage points. The first vantage point seeks to evaluate the overall ability of the PES to match workers and employers and analyze the subsequent impact. The second vantage point attempts to identify why job seekers and employers choose to utilize the PES labor exchange services.

3.3.2 Evaluating the Effectiveness of the Employment Service

3.3.2.1 The Effectiveness of the Public Employment Service

One of the few examples where the PES literature connects with the intermediary literature takes place in Walwei (1996) who sees the placement services of the PES analogous to the matchmaking conducted by the intermediary in Yavas (1994). As such, the PES reduces uncertainty on both sides of the market and enables the public to internalize the surplus. Thus, as Yavas (1994) constructs an intermediation model to aid

in welfare analysis, Walwei (1996) lays out three practical approaches for evaluating the activities of public placement services.

The first approach is that of process measurement or performance evaluation. The literature reflects both the development and application of process measurement. While Sultan and Virgo (1974) and Cavin and Stafford (1985) propose early measurement methodologies, Walwei (1996) contains the most comprehensive set of performance measurement calculations. One such example provided by Walwei (1996) is that of market share. In Yavas (1994), the market share of the intermediary influences other agents as to whether or not they will use the intermediary.

The second approach identified by Walwei (1996) is that of macrolevel outcome measurement, also referred to as aggregate impact analysis. This type of measurement attempts to capture the negative or positive externalities generated by PES usage. For example, in Yavas (1994), positive externalities generated by intermediation usage increased as other agents benefitted from the increased search intensity of others.

Bellman and Jackman (1996a) present a methodology for identifying the impact of Active Labor Market Policy (ALMP) on aggregate economic variables, particularly employment and unemployment. The goal is to determine the net impact of ALMP factoring out deadweight loss, substitution and displacement effects. A matching function is typically a part of the analysis in an attempt to relate the flow from unemployment to the stocks of vacancies in the labor market.

One of the earliest examples of aggregate impact analysis specifically targeted to the PES is Pissarides (1979) who develops a theoretical model to demonstrate how search

methods used by employers and job seekers affect aggregate vacancies and unemployment. Central to this model is the role of unemployment insurance (UI) benefits where Pissarides asserts that UI benefits and costs of job search exhibit the same influence on aggregate unemployment. An increase in UI benefit levels increases the attractiveness of unemployment versus employment which in turn decreases the number of job seekers searching outside the PES. This is similar to an increase in job search costs which force job seekers to rely more on the PES. In response, employers adjust their recruitment method by advertising more job vacancies through the PES. Aggregate unemployment and registered vacancy levels subsequently rise. On the other hand, increasing employer costs for registering vacancies (or subsidizing advertisement outside the PES) reduces the level of registered vacancies while exerting an ambiguous influence on unemployment. However, when combined with increasing job search outside the PES (by lowering UI benefits, for example), aggregate unemployment decreases.

deKoning (2001a) and deKoning (2001b) present more recent approaches used to measure the aggregate impact of ALMP and provide a review of aggregate impact analysis. The overall conclusion is that ALMP has at most a very small aggregate impact. There are some indications that ALMP provides positive benefits to the long-term unemployed but no clear pattern emerges in the literature. deKoning (2001a) points out that the implementation of ALMP may be responsible for the lack of success, rather than ALMP itself.

The final approach identified by Walwei (1996) is that of microlevel outcome measurement. Microlevel evaluations seek to explain what would have happened to PES

clients had they not used the PES. These evaluations can be organized into experimental and nonexperimental categories. Experimental studies test a theory by separating subjects into test and control groups. Nonexperimental studies rely on econometric analysis of survey data to infer microlevel impacts. One such approach is that by Lechner and Wunsch (2009) who analyze a database of administrative data in an effort to determine the impact of training programs sponsored by ALMP on both the employment and earnings of an individual. Of particular interest is their focus on the role unemployment levels play in the benefit of training to individuals. They conclude that the benefits of training are greater during periods of higher unemployment and public funding should vary with the business cycle to maximize the benefits.

3.3.2.2 The Role of Job Search Methods

Part of the effectiveness of the PES is tied to the job search method utilized by job seekers. One segment of this literature investigates the probability a particular job search method transitions a job seeker from unemployment to employment. Typically, the choice of method falls between direct search and search through intermediation. For example, Reid (1972) samples 876 displaced workers from engineering and metal-using trades in the West Midlands of England from 1966 to 1968. The study seeks to compare the degree to which job seekers use formal and informal job search methods as well as the success rate of each method, controlling for age, gender, and skill level.

The study finds that method selection and success differ by gender. For men, an inverse relationship exists between method selection and success. In terms of methods

used, 61.4% used the employment service, 56.6% (not additive to 100%) used advertisements, and 39.3 % relied on friends. These channels exhibited success rates of 25.1%, 36.5%, and 84.5%, respectively. For women, 27.6% used the employment service, 43.2% used advertisements, and 34.5% relied on friends. The resulting success rates were 45.1%, 51.3%, and 95.3%, respectively.

Osberg (1993) presents a different perspective, contending that job search methods and subsequent success will vary over the business cycle by using longitudinal data from the Labour-Force Survey of Canada for 1981, 1983, and 1986. For instance, informal networks proved less successful overall than the PES in economic downturns while the opposite was true during economic expansions. This agrees with the findings of McGregor (1978).

However, Osberg (1993) points out that PES job openings generally offered lower wages than other channels, indicating that the choice of job search strategy is at the same time a choice of employers and subsequently a wage offer distribution. This indicates the presence of self-selection bias. Gregg and Wadsworth (1996), using Labour Force Survey (LFS) data from Britain from 1984 to 1992, control for sample selectivity bias when evaluating the effectiveness of search methods. First, the study finds increasing returns to an increase in the number of search methods used. In addition, PES usage increases the probability of finding a job 3.4 times the sample mean for unemployed job seekers and the increase in unemployment duration is less than 1%. This job-finding probability is even greater for job seekers with vocational and general qualifications (compared to graduates) as well as the long-term unemployed. Only direct contact with

employers yields better success rates than the PES.

3.3.2.3 Employment Service Placement Equity

Employment service placements have also been scrutinized as to their specific impact on clients of a particular race or gender. Craft (1973) analyzes Employment Security Automated Reporting System data in 1971 from the United States. The author notes that total placements were concentrated in lower-skilled occupations compared to the United States labor market. However, when viewed by race, the ranking of occupational categories for Whites remains different from the actual labor market while the ranking for Blacks much more resembles that of Blacks in the labor market. This leads Craft to conclude that the PES does little to improve the economic mobility of Blacks.

Brown (1974) argues that Craft failed to account for turnover by comparing placements with total employment. Craft (1974) counters by indicating that occupations with the highest employment are proxies for those that experience high turnover leaving the ranking scheme in tact.

Johnson, Dickinson, and West (1985), on the other hand, investigate the impact of referrals on earnings and unemployment duration from job seekers using the United States ES. The study finds that women receive substantial, statistically significant benefits from PES referrals while men do not.

3.3.2.4 Job Satisfaction and Retention

The literature also examines the length of employment and job satisfaction of an individual following a placement by the PES. Both the search and intermediation literature would cast this issue within the context of match quality.

Reid (1972) finds that individuals securing a job through a formal intermediary exhibited immediate job dissatisfaction. However, Wielgosz and Carpenter (1987) find that job satisfaction was found to be linked more closely with occupation and industry than with job search method. This contradiction may reflect the narrow occupational selection of Reid's sample. Wielgosz and Carpenter conclude that informal methods are selected for their speed and not for their ability to lead to higher job satisfaction.

Clark (1988) argues that quality of placements by the employment service may lack because that aspect of government intervention is not monitored. More specifically, Clark tests the C. M. Lindsay (1976) hypothesis that government resources will not be directed toward activities that are not monitored or are too difficult to monitor by Congress or the public. However, these activities will appear in private counterparts when a customer is willing to pay for them. The subsequent differences between public and private services will highlight these activities and generally point to inefficient provision of public services.

Clark uses the USES to test this hypothesis. When comparing public and private employment agencies, Clark finds that USES offices have lower placement costs than private agencies. However, almost two-thirds of placements made by private employment agencies retained employment with the same company compared to 40%

placed by public employment agencies. Clark concludes this phenomenon appears because public employment agencies are monitored by the number of placements as opposed to the quality.

Zweifel and Zaborowski (1996) attribute this discrepancy of quality placements to the motivations of public and private employment agencies. They develop a theoretical model based on behavioral assumptions of public and private employment agency workers. In the model, public agents place applicants in nonoptimal matches with employers while private agents are predicted to ask a high wage from applicants during recessions when applicants would have little capital on hand. Despite nonoptimal results by either entity, Zweifel and Zaborowski are inclined to uphold the private model as superior due to its potential to achieve Pareto optimality.

The literature also indicates the business cycle contributes to the relative success of the PES when it comes to placements. The raw number of placements made by a SES is dependent upon the overall vacancies in the market as is reported by Lindeboom, Van Ours and Renes (1994), indicating that labor shortage correlates with the placement counts of the SES and not higher periods of unemployment.

One example from the literature indicates the lack of success may be connected to a lack of understanding of how the underlying economics of the free labor exchange operates. Sheldon (2003), for example, using Switzerland data, acknowledges the presence of thick market externalities present in the placement of job seekers into vacancies. Sheldon found PES offices operating at less than efficient levels because of the smaller size of stocks of job seekers and vacancies.

3.3.2.5 The Efficiency of the Employment Service

The literature also seeks to evaluate the efficiency of PES, namely the speed by which the PES can transition a client from unemployment to employment. This implies that the job search method(s) selected by the job seeker has a direct impact on the duration of his or her unemployment spell.

Wielgosz and Carpenter (1987) conclude search method selection is the largest determinant of unemployment duration according to NLSY data. Using friends and relatives is associated with the shortest durations of unemployment while the PES is almost always associated with the longest duration of unemployment, followed by direct application to employers and private employment agencies. This is similar to Reid (1972) who concludes men finding their jobs through friends had shorter unemployment spells.

This impact even overshadows that of the business cycle. The longitudinal nature of the data enable Wielgosz and Carpenter to control for the impact the overall demand for labor has on unemployment duration using the state unemployment rate as a proxy. They did find that higher unemployment rates were associated with increased lengths of unemployment duration; however, the impact was less than that of search method selection.

Similarly, Lindeboom, Van Ours and Renes (1994) use Netherlands data and find employed and unemployed job seekers rely primarily on advertisements for their job searches and that when it comes to overall speed at which a particular method results in a match, the PES takes the longest of all methods.

Like Wielgosz and Carpenter (1987), there is some evidence the business cycle affects these results. When there are more job seekers, as in the case with greater unemployment, the unemployed are impacted more negatively than the employed. In addition, the overall number of matches rests on the number of vacancies in the market.

One factor behind the longer duration associated with the PES may arise from the type of activity conducted. Van Ours (1994) demonstrates the variance in PES activity effectiveness by using a competing risk model and applying a matching function on Netherlands data to analyze different mediation methods used by the public employment office on unemployment duration. The study finds that intensive matching, as opposed to other methods, demonstrates a small ability to reduce unemployment duration for public employment office clients. This conclusion is supported by Sheldon (2003) with Switzerland data.

These nonexperimental studies cast the efficiency of the PES in a negative light. These conclusions, however, differ from several experimental studies designed to test policy changes in UI. In these instances, individuals using the PES had shorter unemployment spells. Meyer (1995) provides a comprehensive review of such experimental studies.

Thomas (1997) identifies the apparent disparity between the experimental evidence versus that of nonexperimental evidence. Using microdata from the 1987 – 1988 U.K. Survey of Incomes In and Out of Work (SIIOW), Thomas concludes that nonexperimental studies fail to account for PES usage that occurs as a last resort following long periods of unemployment. This conclusion supports that of Osberg

(1993). Furthermore, when used at the same time, the PES actually exhibits faster results than other methods.

3.3.2.6 The Aggregate Impact of the Employment Service

Recent evaluations of Active Labor Market Policy (ALMP), which includes such activities as the public labor exchange, investigate not just the impact on job seekers or the efficiency of the public labor exchange. Rather, these studies seek to determine the overall effectiveness in lowering unemployment. One such evaluation is represented by aggregate impact analysis which attempts to identify the net impact ALMP has on aggregate variables such as the unemployment rate. Bellman and Jackman (1996a), deKoning (2001a) and deKoning (2001b) represent the current approaches to aggregate impact analysis. Recalling the analysis previously reviewed in this chapter, the overall conclusion is that if ALMP has any net impact, it is small. While there are some indications that ALMP provides positive benefits to the long-term unemployed, no clear pattern emerges in the literature.

Plesca (2010) takes a slightly different approach by using a general equilibrium model to determine the impact of ALMP. In this model, a market is considered with and without the public labor exchange. This model relies on Pissarides (1979) and neoclassical job search theory and yields conclusions similar to his research: without the public labor exchange, matching would be more efficient and unemployment durations would be shorter. However, this model extends Pissarides (1979) by demonstrating that without the public labor exchange, the lack of sorting would create welfare losses for

higher skill workers and gains for lower skill workers.

3.3.2.7 The Role of Unemployment Insurance

Longer unemployment durations associated with employment services have also been associated with the high percentage of employment service clients receiving unemployment insurance. According to job search theory, UI raises the job seeker's reservation wage and subsequently, unemployment duration.

The impact of UI alone on the reservation wage of job seekers lies outside the scope of the study. The question at hand remains whether UI affects unemployment duration for PES clients or hampers the ability for the PES to quickly transition job seekers to employment.

Keeley and Robins (1981) use EOPP data to examine the effects of government job search requirements (along with cash or in-kind benefits) on unemployment duration. They find that individuals who engage in intensive search that entails direct contact with employers have shorter durations of unemployment than those involved in government job search programs. They conclude this discrepancy arises because government job search programs in their current form increase the reservation wage and misallocate job search resources.

Barron and Mellow (1982) link the level of UI benefits to usage of the PES by presenting a model where employers respond to job seeker behavior. UI benefits provide an incentive for job seekers to decline offered employment which in turn raises hiring costs and decreases the incentive for some employers to recruit through the PES. Large

employers continue to use the PES because they are able to minimize these higher hiring costs by having dedicated human resource personnel.

Some empirical research supports these conclusions. For example, Roed and Zhang (2003) find that even a marginal increase in UI benefits can slow the escape rate back to employment. However, as benefits approach exhaustion, the escape rate increases sharply. They find that this effect is more pronounced with women than with men.

However, some empirical tests yield different conclusions. Wielgosz and Carpenter (1987) tested for the impact of UI on unemployment duration and find no statistically significant impact. In a similar fashion, Osberg (1993) controls for sample selectivity bias and finds that UI benefits are shown to exhibit little impact on job-finding probability. Thus, the reservation wage is not a contributing factor to the PES unemployment duration as predicted.

This is backed by Director and Englander (1988) who compare two periods (1970 – 1975 and 1975 – 1980) with different UI policies in New Jersey to investigate the impact of job search requirements for UI recipients. Those job seekers registered with the PES had both a higher speed and probability of reemployment.

3.3.3 The Determinants of Employment Service Use

3.3.3.1 Usage by Employers

The literature seeks to explain the reasons certain employers choose to use an intermediary in the recruitment process as opposed to informal methods. In the PES

literature, Bishop and Abraham (1993) analyze the 1987 National Federation of Independent Business (NFIB) survey as well as the Employment Opportunity Pilot Projects (EOPP) survey conducted between February and June 1982. From the EOPP survey, Bishop and Abraham find that employers using labor market intermediaries invested more time in the hiring process than those engaged in direct search. However, Abraham readily admits both surveys may not represent the universe of employer hiring experiences.

A common thread in the literature appears to indicate intermediary usage occurs when more preferred methods are unavailable or have already been exhausted. This can be seen as early as Rees (1966) who analyzes the information labor market participants have about each other within the context of formal and informal job-finding networks. The former includes SESA, private fee-charging employment agencies, newspaper advertisements, union hiring halls, and school or college placement bureaus. The latter includes referrals from employees, other employers, miscellaneous sources, and walk-ins or hiring at the gate.

Rees finds informal sources are responsible for half of all hires in white-collar occupations and more than four-fifths for blue-collar occupations. Thus, Rees like Baldwin (1951) rebuffs notions of an unorganized labor market indicating that the importance of informal networks is crucial when there is great variance on both sides of the market. Employers prefer informal networks due to their lower costs and informational advantage.

However, employers are not always able to use informal methods. Drawing upon

Stigler (1962), Rees maintains that high wages and high search costs are substitutes, forcing low-wage employers to use formal methods. Newspapers were utilized at least as much as the employment service. In the case of large geographical searches, the U.S. Employment service and private employment agencies were utilized more.

The availability of preferred recruitment methods also depends upon the business cycle. Wood (1985), using data from Germany and Britain from 1980 and 1981, looks to the role the business cycle plays in recruitment methods. Wood finds that informal methods are relied on more heavily during recessions and that PES usage increases when labor is short. In terms of selecting candidates, the impact of business cycles was ambiguous.

It is possible employers may not feel confident in the likelihood of success offered by preferred methods. Bull, Ornati and Tedeschi (1987) identify the determinants of private employment service (PRES) usage in the United States and find that employers will use private agencies to reduce sampling risk even when the private agencies may not have any technological advantage.

3.3.3.2 Preferences of Employers

The literature also strives to explain why certain employers are willing to use a fee-charging intermediary over a free one like the PES. Bishop and Abraham (1993) cite that despite the increased time investment associated with intermediary use, employers using the PES invest the fewest hours in hiring compared with other labor market intermediaries. However, the same study indicates the PES is responsible for very few

new hires. The EOPP survey indicated that 3.6% of new hires resulted from PES operations compared with 2.8% reported in the NFIB survey.

Rees (1966) finds employers show more satisfaction with PRES than public employment agencies, primarily citing poor screening on the part of the latter. This would cause employers to prefer a private intermediary over a public one, even though the private may be associated with a larger time investment as in Bishop and Abraham (1993). In addition, Haulman, Raffa and Rungeling (1987) provide evidence that the usage of different intermediaries may follow a sequential rather than simultaneous path where preferred intermediaries are utilized first. They investigate whether the Johnson and Sugarman (1977) findings hold for a service-dominant economy like the Orlando MSA. More specifically, the authors seek to determine if help wanted ads and the PES serve different labor market intermediary roles. According to Johnson and Sugarman, the best jobs are filtered out prior to hitting public circles, leaving the newspapers and PES with a predominant collection of lesser quality jobs. Haulman, Raffa, and Rungeling find that in Orlando, the newspaper serves as an additional filter and subsequently has a slightly better mix of jobs than the PES. This corresponds to Lindeboom, Van Ours, and Renes (1994) who find employers relied on advertisements and informal methods 50% more than the PES.

3.3.3.3 Indirect Network Externalities

A small strand of the PES literature incorporates the role of indirect network externalities with respect to employer PES participation. This framework provides the

best explanation of the ranking of one intermediary over another. Employers choose whether or not to post a vacancy to the PES based upon their understanding of what type of applicants they can expect from the PES.

This linkage can be seen as early as Edwards and Krislov (1971) who examine the activities of three SES offices in Appalachia and conclude that employer usage of PES services is tied to the qualifications of referred job seekers as well as the ability of the PES to screen potential applicants.

This framework runs counter to Neoclassical job search theory that has at its core a job seeker sifting through job offers. Adnett (1987), in fact, presents several reasons to reject Neoclassical job search theory when analyzing the PES. First, citing Barron, Bishop and Dunkelberg (1985) and Jackman (1985), Adnett argues that employers sift between potential candidates rather than job seekers choosing between several offers. Adnett further questions whether apparent shifts in the Beveridge curve actually point to lack of search intensity in the labor market, claiming instead the shift reflects longer durations of employers making hiring decisions. Second, Adnett argues Neoclassical search theory has little ability to explain the form and duration of on-the-job search with its base assumption that the job seeker is unemployed. Third, Adnett believes Neoclassical theory has difficulty explaining partial registration of job vacancies with the PES when the service is offered for free. Finally, Adnett claims Neoclassical analysis leads to ambiguous conclusions as Barron and Mellow (1982) claim unemployed applicants prefer UI benefits whereas Pissarides (1979) advocates private search by unemployed.

The focus on employers removes job seeker search intensity from the center of the debate and shifts it to job seeker skill levels. This shift also breaks the perceived relationship between unemployment duration, the number of job offers received and search intensity. The search for qualified applicants gives rise to the extended internal labor markets (EILM) as a way to combat large streams of unqualified applicants.

This may explain why some employers prefer other recruitment methods, even when the PES may have the shortest vacancy duration. Roper (1988) seeks to examine the connection between recruitment method and vacancy duration by developing a theoretical model and using data from the Survey of Employers' Recruitment Practices from November 1976 and February 1977 during the middle of an economic downturn in Britain. In terms of formal recruitment methods, the PES proved to provide the shortest vacancy duration. In addition, the automated PES vacancy tool (job board) provided even shorter durations.

Kubler (1999) identifies client differences between public and private employment agencies and recommends employers exploit this discrepancy in an effort to screen workers. Kubler develops a model consistent with public choice theory in which public and private employment agencies coexist. The model seeks to explain the difference in clientele between public and private employment agencies by coupling agency efficiency with worker quality. The worker retains private information about both ability and effort choice. Good worker types will bypass inefficient mechanisms in order to avoid human capital depreciation while bad worker types will attempt to mimic good worker types by demanding unemployment compensation. The unemployment

compensation serves as an information rent. Employers can use contract offers to screen workers to reveal worker types.

3.3.3.4 Usage by Job Seekers

The literature presents several reasons job seekers use the PES apart from being required to do so because of receiving UI benefits. The primary factors for job seeker usage emerging in the literature are implementation of the PES services, quality of job seeker information networks, and the business cycle.

To begin with, PES client characteristics may be affected by PES implementation. Lindeboom, Van Ours, and Renes (1994) find that the Netherlands ES is associated with shorter job search duration for unemployed clients than those employed and that usage of the ES by unemployed job seekers outpaces that of employed job seekers 4 to 1. The authors suggest these results may highlight the fact that the employment office in the Netherlands is designed specifically for the unemployed.

This finding is similar to Adnett (1984) who indicates when the UK implemented a structural change in service delivery, particularly the establishment of “jobcentres,” it induced greater usage by employed job seekers. The author speculates that this may raise the perception of PES job seeker skill levels and attract more employers to post vacancies with the PES which in turn will help all job seekers.

Job seekers may lack the adequate level of information to utilize preferred search methods, such as friends and relatives. Kahn and Low (1990) conclude that job seekers use UI to subsidize the collection of labor market information. Most job seekers use

informal contacts that result in higher wage offers than those found in an employment service. More specifically, when a job seeker has a lower discount rate, a lower initial stock of labor market information, greater coverage by UI, and a wider range of wage offers, usage of the PES increases. This coincides with the claim by Stiglitz (1985) that job search tends to reduce the variance in the wage offer distribution. In addition, greater usage of PES services by employed Blacks than their White counterparts may indicate that Blacks may lack access to informal job networks.

This is similar to Adnett (1987) who speculates that EILM serves as the true constraint to labor market efficiency. Those without informal connections are at a disadvantage and would subsequently need to rely more on ES services. Adnett uses this theory to explain the results of Johnson, Dickinson, and West (1985) where women benefitted more from PES activities than men.

According to the literature, the business cycle exhibits limited influence on unemployment duration and method success. Job seekers respond by increasing the number and type of search channels. From the vantage point of the PES, this impact is most visible in job seeker characteristics.

Kahn and Low (1990) claim higher unemployment rates are associated with increases in PES usage (although not significantly) because the opportunity costs of using intermediaries decreases. Similarly, Adnett (1984) investigates the flow of employed job seekers using the PES in the UK. The author finds that the level of unemployment had a negative influence on the inflow, reducing on-the-job search efforts and presumably labor mobility and overall labor market efficiency.

Gregg and Wadsworth (1996) focus primarily on the stock of unemployed job seekers using the PES. The study finds that unemployed job seekers utilize more methods than the employed. However, during economic downturns where the number of vacancies per search channel decreases, unemployed job seekers compensate by increasing the number of search channels used while employed job seekers decrease their search efforts. Since unemployed job seekers are still searching for the same number of vacancies, albeit across more channels, the authors feel this refutes the notion that search intensity changes over the business cycle. In addition, during economic downturns, the percentage of long-term unemployed job seekers increases relative to the short-term unemployed. In fact, it is the changing stock of the long-term unemployed that drives the overall changes in composition between unemployed and employed job seekers.

3.3.3.5 The Relationship With Unions

In many ways, the relationship of the USES to the unemployed has similarities to that of labor unions. According to Bassi and McMurrer (1997), unions have “traditionally represented a powerful source of information regarding available benefits to unemployed workers” (Bassi & McMurrer, 1997, p. 71) and have often assisted union members with the UI filing process. This is further supported by Budd (2007) who details the extensive role and impact of labor unions on providing resource information to the unemployed. Furthermore, labor unions have focused on preparing a qualified workforce for their employers through training and apprenticeship programs (Freeman & Medoff, 1984) and have even taken the place of the SESA as UI claimants who are

attached to a union hiring hall are typically exempt from registering with the SESA.

With the decline of unionization, one would expect more unemployed workers would be looking to the SESA for employment services. However, the literature suggests this may not be the case. Because of the key information role labor unions played in helping the unemployed, it is possible many unemployed individuals are unaware of the employment services provided by the SESA or more importantly, that they may qualify for UI benefits. If the individuals filed for UI benefits, they would be required to utilize the services of the SESA and become more familiar with USES services.

Several studies have estimated that it is the decline of unionization that is responsible for the decline in UI initial claims, specifically in the 1980s. Blank and Card (1991) estimate 25% of the decline in claims can be attributed to the decline of unionization while Baldwin and McHugh (1992) estimate the impact to be as high as 29%. Thus, even though the USES and labor unions have similarities in their roles, it is possible the transition from labor unions to the SESA has not taken place to the extent one would expect.

3.4 Conclusion

As can be observed above, the PES literature has largely focused on empirical evaluations of public labor exchange activities and the roles of related workforce programs such as UI and job training. While there have been more recent efforts to incorporate theoretical research, these few examples tend to approach the public labor exchange from the perspective of Neoclassical job search theory. Thus, workforce

programs such as UI, for example, are seen as instruments that prolong unemployment and raise reservation wages. Subsequent policy implications from these models tend to conclude the PES brings inefficiency to the labor market, rather than the efficiency that lay at the heart of its mission.

Yet, the PES literature has largely developed independent of intermediation theory. Consequently, as the intermediation literature evolved past simple reselling and brokerage models and linked with the literature of matchmaking, search and networks, the PES was never evaluated as a two-sided platform. Thus, the potential of UI or skills training as a key subsidy to exploit indirect network externalities has not been investigated.

This paper seeks to incorporate intermediation literature, especially that of multisided platforms and the role of subsidies into the body of the PES literature. By evaluating the USES from the multisided platform perspective, one can develop a better understanding of how employers and job seekers use the USES and what programs have value beyond the immediate group they target because of their ability to help the USES reach both sides of the market.

The following chapters will analyze several periods of ES history under various policy regimes. Through econometric analysis, the SES of Utah and other states will be evaluated as an intermediary of a two-sided platform. In addition, several subsidies will be identified that serve to exploit these externalities. This will lead to new conclusions about USES policy in the future.

CHAPTER 4

THE FOUNDATIONAL PERIOD: 1947 - 1963

4.1 Background

4.1.1 The Research Hypothesis

Intermediaries operating on two-sided platforms “coordinate the demand of distinct groups of customers who need each other in some way” (Evans, 2003, p. 191). For the market or platform to be considered two-sided, one or more groups using the platform must demonstrate indirect network externalities: one group of agents (Group B) will only participate on their platform if another group of agents (Group A) participate first.

To solve this problem, intermediaries must understand the nature of the indirect network externalities and adjust the cost allocation of participation across both groups. By subsidizing one group, the lower cost increases platform participation. Consequently, the other group is induced to participate. Thus, the intermediary can use subsidies to maximize transaction volume and get both groups to join the platform.

The USES operates as a matchmaking intermediary overseeing a public labor exchange platform where job seekers are matched with employers. This paper investigates whether or not this platform is two-sided and if the USES could provide

additional services which act as strategic subsidies to get both sides to participate and facilitate matching. To test this hypothesis, this paper will investigate whether a subsidy to one side of the market increases the participation of the other side of the market.

4.1.2 The Subsidies

To that end, this chapter will investigate the impact of three specific subsidies: UI benefits, job seeker aptitude testing, and employment counseling. These three subsidies would work as follows. The first is an explicit subsidy paid to job seekers. When employers have few job openings, UI benefits enables the USES to maintain a pool of job seekers ready to work when more jobs become available. Thus, if it generated indirect network externalities, it would encourage employer participation after a substantial period of time. Without this subsidy, job seekers would have little incentive to use the SES when unemployment is high. Consequently, as the economy begins to recover, the SES would not be able to help employers fill their new openings.

If UI benefits act as a strategic subsidy to facilitate employment matching, it will counter much of the literature's view of UI's role in the job search process. In Neoclassical job search theory, for example, UI is seen as the force that impedes employment matching by raising the reservation wage and promotes unemployment duration. Examples of this framework include Pissarides (1979), Keeley and Robins (1981), Barron and Mellow (1982) and Kahn and Low (1990). Nevertheless, revisiting the role of UI in the job search process may be warranted in that many studies such as Wielgosz and Carpenter (1987), Osberg (1993) and Director and Englander (1988) have

demonstrated that UI benefits do not actually prolong unemployment durations.

The second subsidy investigated in this chapter is job seeker testing. The SESA offer aptitude testing to job seekers to help them ascertain their skills and guide their job search. If this generates an indirect network externality for employers, it will resemble value addition similar to that discussed by Spulber (1996a) and Li (1998). When using the USES, employers face asymmetric information and subsequently moral hazards when hiring job seekers from the SESA. By conducting aptitude testing of job seekers, the SESA also performs quality validation services, improving the welfare of employers and reducing their search costs.

There is already some evidence in the literature that the job seeker testing process encourages employer participation because of their desire to find a qualified job seeker. This would suggest the presence of indirect network externalities, a feature of two-sided platforms. Rees (1966) finds employers show more satisfaction with private employment agencies than public employment agencies, primarily citing poor job seeker testing conducted by public agencies. Thus, it is not the size of the labor pool that influences employer participation but rather the type of job seekers that are available on the platform. This is similar to Edwards and Krislov (1971) who conclude that employer usage of PES services is tied to the qualifications of referred job seekers as well as the ability of the PES to screen potential applicants.

The third subsidy explored in this chapter is that of employment counseling. The SESA provide employment counseling to job seekers who have barriers to employment. These barriers could include age (youth or older workers), disabilities,

training gaps, or simply unrealistic expectations. Regardless of the reason, these job seekers have a more difficult time finding a match. This creates a negative externality for employers by reducing the pool of qualified candidates for their job opening.

At times, this counseling leads to advocacy and education efforts to help employers look past age or other issues when making hiring decisions. In other instances, it requires adjusting the occupational goals of the job seeker based on their actual circumstances, not their unrealistic perceptions. However, in the case of skill gaps, the SESA often help job seekers obtain training to become more job-ready.

In many ways, the employment counseling subsidy represents the bargaining role of an intermediary as in Yavas, Miceli, and Sirmans (2001) as well as the brokerage intermediary role as found in Spulber (1996a) and Myerson and Satterthwaite (1983) in which the intermediary chooses to subsidize the transaction in order for both sides to agree to the deal. Without this intervention and value addition, the employer would have one less qualified job seeker to recruit and the job seeker would have fewer options with higher wages.

When employment counseling leads to training, it could function as a subsidy that exploits indirect network externalities because it improves the qualifications of the job seekers the employer hopes to find and typically includes the validation of skills provided by testing. However, the challenge with employment counseling as it relates to this research is the time it takes for the effects of the training implementation of this subsidy to be observed. Both UI benefits and testing are subsidies whose outcomes can be observed almost immediately. When employment counseling involves adjusting the

mindset of employers or job seekers, it also can have a rather immediate effect.

However, when it leads to training it may take a substantially longer period of time to generate an impact.

4.1.3 Historical Context

This chapter will explore the formative years of the modern USES which began shortly after WWII and lasted until 1963. This era featured the implementation of the USES strategic “Six-Point Program” developed in 1946. This initiative included a focus on placement services, employment counseling, services to special applicant groups (i.e., veterans and youth), management service (assisting employers in job analysis and testing), labor market information, and community participation (cooperation with community organizations involved in employment planning). These services were especially critical with the millions of WWII veterans pouring through the SESA from September 1, 1944 through August 31, 1949 (Haber & Kruger, 1964).

In terms of policy, Ruttenberg and Gutchess (1970) assert that following World War II and as late as 1964, the SESA prioritized services to employers over job seekers. This priority manifested itself by trying to refer the best workers possible to employers, meaning that the needs of some job seekers would be prioritized lower. Underlying this belief was the recognition of indirect network externalities: Employers would not participate in the future if the SESA did not refer the most qualified workers in the present.

This employer-centric approach was consistent with the institutional history of the

USES leading up to this period which also focused on serving the need of employers. Revitalized in 1933 with the Wagner-Peyser Act, the first years of the USES focused on finding labor for WPA programs during the Great Depression. Similarly, during WWII, the USES prioritized finding workers for firms supplying the WWII effort. When the Korean War Conflict emerged, the USES modified the focus of labor market research to prepare for the upcoming demands on the labor force and prioritized service to employers in the defense industry (Haber & Kruger, 1964).

Thus, after WWII and into the foundational period, this focus led to a new service that benefited employers: aptitude testing of job seekers. Substantial testing efforts emerged during this period in response to employer demand. As early as 1952, the ES reported “the number of employers requesting test selected applicants is steadily increasing” (UDES, 1952).

Nevertheless, this employer focus did not preclude helping those job seekers who were not job-ready as the SESA also provided employment counseling to those job seekers with barriers to employment. These barriers included age (youth and older workers), training gaps, disabilities or inaccurate occupational goals of the job seekers. While at times the remedy was job training, in other instances the SESA took on the role of employer education, helping employers see for example, “older workers as a valuable manpower resource” (UDES, 1955). When the job seeker needed direction or readjusting in terms of occupational goals, testing served as a great tool to help the job seeker better understand their skill set. Coupled with the ongoing improvement of labor market information during this period, job seekers could obtain a more accurate sense of their job

prospects.

Alongside these activities, USES also provided UI benefits subsidies throughout this period. In fact, UI claim processing often received higher prioritization than ES services. Throughout the 1950s, approximately 17,000 SESA workers across the country focused on placements while 28,000 provided UI operations (Janoski, 1990). Even former Secretary of Labor James P. Mitchell accused the USES of being too preoccupied with processing UI claims (Levitan, 1964).

4.1.4 National Context

Because of the limited administrative SESA data available, only Utah is analyzed during this period. Thus, it is important to understand how the Utah labor market compared to that of the United States. From 1950 to 1963, Utah labor market demand resembled that of the United States as can be seen in Figure 4.1. This similarity is greatest from 1950 to 1955 and from 1962 to 1963. From 1956 through 1961, however, Utah experienced a much lower unemployment rate, especially in 1958 and in 1961. Thus, the Utah labor market had much greater employment demand coming out of the period of The Korean War Conflict than the United States as a whole.

4.1.5 Testing the Hypothesis

This chapter will analyze the Foundational Period of the UDES to test the hypothesis that the USES in partnership with SESA operates as a two-sided platform and can use strategic subsidies to coordinate employer and job seeker behavior. To that end,

the analysis in this chapter will investigate (1) how employment demand affects employer participation, (2) the impact of job seeker participation on employer participation, (3) the impact of UI benefits, job seeker testing and employment counseling on the participation of employers, (3) how employment demand affects job seeker participation, (4) whether job seeker behavior is influenced by the number of job openings posted, and (5) the impact of UI benefits, job seeker testing, and employment counseling on job seeker participation.

4.2 Data

4.2.1 Data Sources

The data set used to test the hypothesis has been constructed uniquely for this analysis by the author from two U.S. government publications: the *Social Security Bulletin* (1947-1949) and the *Labor Market and Employment Security* monthly report (1949 – 1954) as well as annual reports published by the Utah Department of Employment Security (UDES) from 1947 to 1963. UDES operated the SES in Utah during this period of time in partnership with the USES.

Collectively, these publications report monthly and annual counts of various labor market metrics across the country as well as the breadth of Utah ES activities and transactions conducted by the UDES. While future research should explore this vast data set further, this current research will be scoped to the Utah statewide level across all workers and employers.

4.2.2 Selected Variables

The scope and criteria outlined above determined what data elements would be selected for the 1947 to 1963 analysis. These variables are described below.

4.2.2.1 Unemployment

As a matchmaking intermediary, UDES faced the additional challenge of the ever-shifting search cost allocations of employers and job seekers. These search costs are allocated to employers and job seekers differently as employment demand fluctuates. Unemployment levels have been selected as a variable to reflect this demand.

To provide economic context to this analysis, Figure 4.2 provides a chart of seasonally unadjusted unemployment levels divided by the size of the labor force, thus approximating the Utah unemployment rate. As can be seen in this chart, unemployment gradually increased during this period of time. The Korean War Conflict also exhibited substantial volatility on the Utah labor market during the early 1950s.

It is expected that employers will post more jobs when unemployment is low and job seekers will thus require the UI subsidy to maintain participation when unemployment is high. Figure 4.3 compares the unadjusted counts of unemployment, UI initial claims and job openings. As expected, employers tend to post more job openings when unemployment is lower and more UI initial claims are generally filed when unemployment is higher. What is also evident in this chart is that the level of activity at the UDES is lower than the levels of unemployment in Utah indicating some unemployed in Utah are not participating at all with the UDES.

4.2.2.2 UI Initial Claims

All individuals have the right to file UI claims, although only those who meet certain requirements are able to receive benefits. Initial claims reflect counts of individuals attempting to claim UI, not necessarily those who meet the requirements. Typically, workers file for UI when they cannot find a job although they may be only laid off for a season.

However, receiving UI benefits requires claimants to register for work at the ES unless they can expect to return to their employer in the near future. Thus, UI benefits act as a subsidy to maintain a pool of labor until the labor market recovers. Naturally, the filing of UI initial claims frequently leads to increases in SES job seeker registrations. Thus, counts of UI initial claims have been selected to represent the UI benefits subsidy provided to job seekers.

Figure 4.4 compares counts of UI initial claims to counts of new applicants. Similar to unemployment levels throughout this period, UI initial claims fluctuated with the season. In addition, the long-term trend of UI initial claims follows the cycle of unemployment increases in the late 1940s and into 1950 followed by a trough throughout The Korean War Conflict. From there, a general trend upward continues with peaks in the mid- and late-1950s before leveling off in the early 1960s.

Also evident is the fact that UI claims tend to lead new applicant counts although UI claims often overshadow new applicant counts in terms of magnitude. This difference reflects the fact that those workers who expect to return to their employer need not register for the labor exchange. However, there are also occasions when counts of new

applicants are higher than UI claims. This suggests other factors may be influencing job seekers to register with UDES rather than just the UI subsidy.

4.2.2.3 Job Openings

Employer participation on the USES platform is measured by counts of posted job openings. When employers were in need of workers for jobs at their firms, they voluntarily notified UDES. UDES in turn made an effort to notify job seekers registered with the UDES by posting these jobs on a public bulletin board giving rise to the term “job board.” UDES also worked to recruit workers for these jobs from the registered job seeker pool.

Each job posted with UDES was counted as a job opening for reporting purposes. UDES reported these job openings across two categories: agricultural and nonagricultural. This classification was used because agricultural job openings tended to be temporary and highly seasonal in nature. Agricultural job openings also comprised a very small portion of total job openings, especially as the Utah economy developed over the next several decades. Consequently, while this research analysis will utilize the term “job openings” throughout, it will only examine counts of nonagricultural job openings.

Figure 4.5 compares counts of job openings to UI initial claims and reveals job openings and UI initial claims have differently seasonal patterns and frequently move in opposite directions. If both of these two forces, which tend to move in opposite directions, exhibit influence on the behavior of job seekers, one would expect job seeker activity to be relatively flat throughout this period, following the long-term combined

trends of job openings and UI claims. Thus, the peaks and troughs of job openings and UI claims “cancel” each other out.

4.2.2.4 New Applicants

Job seeker behavior will be represented by counts of new applicants—those job seekers who registered for SES job services. Specifically, a new application is the initiation of a 12-month window for which a job seeker can use and later reuse SES services. This is an important distinction as the UDES annual reports actually contain two overlapping data elements related to job seeker activity. One category is the “Active File” which is a current account of all job seekers with active registrations for a given period of time. This is similar to the Total All Applicants category used in more recent reporting and in Chapter 7 of this paper. New applicants, on the other hand, represent the event in which a job seeker creates a new registration for ES services.

Thus, new applicant counts should not be confused with first time users of the SES. For example, after making a new application, a job seeker may use the SES, get referred to a job, become unemployed and reactivate their registration—all within a 12-month period of time. Under that scenario, there is one new application for that 12-month period but that job seeker would show up on the active file every month he or she is using SES services.

Figure 4.6 charts the flows of new applicants who registered with the UDES. As expected, despite seasonal patterns, new applicant flows appear relatively flat along with a gradual, long-term upward trend.

4.2.2.5 Individuals Tested

During this period, UDES began administering aptitude tests to individuals to determine and validate skill sets. Thus, job seeker testing could exploit the indirect network externalities of employer behavior because it reduces their moral hazards of search and encourages their participation. Because this process emerged during this period of time, counts of individuals tested did not appear in UDES annual reports until 1949. Furthermore, because this was a process that received increasing attention during this period, much of the increase in testing during this period could be attributed to the evolution of this activity rather than typical fluctuations of an established program.

Figure 4.7 charts counts of individuals tested alongside job openings counts. While not even counted in 1947, testing levels increased steadily throughout this period. Apart from the small decline from the mid-1950s to 1958, counts of testing appear to reflect an institutional priority rather than an activity just driven by employment demand. Note also how testing counts spiked during The Korean War Conflict indicating its early acceptance and priority among employers using the UDES.

Figure 4.7 also indicates seasonal spikes beginning in the late 1950s and continuing into the 1960s. These spikes in the fall reflect that UDES regularly went into local high schools to administer tests to students as part of a work-readiness effort. Because many high school students did not attend college during this period of time, this testing effort could lead to increases in new applicant counts independent of labor market conditions. However, this outreach to high school students could include individuals who never registered with the UDES, thus obfuscating the contribution of testing.

4.2.2.6 Counseling Interviews

Whereas testing guided the referral decisions of the UDES for job seekers who were ready for employment, some job seekers faced barriers to employment. These barriers could include age (older workers), disabilities, training gaps, or unrealistic occupational goals. In these instances, UDES workers counseled the job seekers in order to address these barriers. Thus, it could be some time before these job seekers were ready for referral. Nevertheless, counseling served as a subsidy to both employers and job seekers, enabling UDES to serve as bargaining mediator or a broker to help clear the market, despite the length of time it may have taken.

As can be seen in Figure 4.8, while not nearly the increasing activity such as testing, counseling interviews increased steadily throughout this period until leveling off in 1960 with small declines following. Furthermore, despite the spikes in testing in the late 1950s and early 1960s, employment counseling and testing activities tended to follow the same seasonal fluctuations and trend. Thus, while testing received substantial focus during this period, testing did not really start exceeding counseling activities until 1962.

4.2.3 Transformations

While previous charts depicted the values of each series as reported by UDES, transformations were applied to each series prior to analysis. These transformations are detailed below.

4.2.3.1 Data Set Truncations

Monthly counts for most of variables were reported by UDES from 1947 to 1963. However, counts of individuals tested did not begin until January 1949. Consequently, data elements available from 1947 were shortened to have a similar start date as individuals tested.

Apart from this data reduction, no other observations were removed for this analysis. This is significant because each data series was affected by The Korean War Conflict in some manner. While the war generated outliers in each data series, this research retained these data points because of the overall limited number of observations available as well as the differences in the times each series experienced this shock. In addition, the UDES had substantial experience with wartime labor exchange management playing a critical role in the labor exchange process as recent as WWII. Thus, while a shock to their operations and the labor market, the data from this period still provide valuable insight into the research objectives of this analysis.

4.2.3.2 Seasonal Adjustments

The charts of the data series in the previous section demonstrate that UDES did not make any seasonal adjustments to the reported data. Because this seasonality could affect analysis, multiple seasonal adjustment procedures were considered; however, seasonal adjustment was ultimately performed using the X-12-ARIMA procedure developed by the United States Census Bureau. This seasonal adjustment was selected because of its common usage with labor market data, including its use by the Bureau of

Labor Statistics (BLS), the administrator of the unemployment reporting methodology. This approach also preserved the original definitions of the series more than those that utilize differencing and facilitated bivariate analysis of the seasonally adjusted series unlike that of seasonal adjustments that use dummy variables.

4.2.3.3 Conversion to Natural Log Growth Rate

The X-12-ARIMA approach also simplified the final transformation which was the conversion to a natural log growth rate according to the formula found in Equation 4.1 below.

$$\hat{w}_t = \ln(x_t) - \ln(x_{t-1}) \quad (4.1)$$

4.2.4 Univariate and Bivariate Analysis

To better understand the relationship between the growth rates of these series, several univariate and bivariate analyses were conducted. To begin with, Table 4.1 displays the descriptive statistics of each series. With the exception of individuals tested, each transformed series appears evenly distributed around the mean and median. Individuals Tested, however, demonstrates positive skew. This can be expected given the fact testing activities dramatically increased during this period of time.

A review of the Pearson Correlation Coefficients between these variables is also revealing. As can be seen in Table 4.2, statistically significant negative correlations appear between job openings and unemployment, reflecting the impact of employment

demand on employer job postings. To further illustrate these correlations, scatter plots are provided. Each of these scatter plots also feature a 95% prediction ellipse according to Equation 4.2 below, where $\alpha = 0.05$.

$$\pi = \frac{2(n+1)}{n-2} F_{2,n-2}(1-\alpha) \quad (4.2)$$

The negative slope of the prediction ellipse of the scatter plot displayed in Figure 4.9 further demonstrates the negative correlation between job openings and unemployment.

In addition, the positive, statistically significant correlation between new applicants and job openings as well as that between new applicants and initial claims provides early confirmation the research hypothesis is correct. Despite the fact that job openings and UI claims move in opposite directions, both series have positive correlations with new applicants. These relationships are visualized in Figures 4.10 and 4.11.

What is additionally promising for the hypothesis is the positive correlation between job openings and individuals tested as depicted in Figure 4.12. This suggests testing job seekers does exhibit a positive influence on job openings by reducing the moral hazards of employers.

One surprising aspect of Table 4.2 is the statistically significant correlation between job openings and counseling interviews and the lack of correlation between

counseling and new applicants. This suggests counseling, while a subsidy that offsets the search costs of job seekers and employers, may influence the participation of employers more than job seekers.

4.3 Model Results

To test the hypothesis, employer and job seeker UDES participation will be analyzed with a VARX(7,1) model across t months according to Equation 4.3 below:

$$\begin{pmatrix} j_t \\ n_t \end{pmatrix} = \sum_{i=1}^p \varphi_i j_{t-i} + \sum_{i=1}^r \theta_i n_{t-i} + \sum_{i=0}^s \beta_i m_{t-i} + \alpha u_t + \gamma g_t + \delta c_t + \epsilon_t \quad (4.3)$$

where $p=1,3$, $r=7$ and $s=1$, j_t denotes job openings, n_t represents new applicants, m_t , u_t , g_t and c_t represent UI initial claims, unemployment, job seeker testing and employment counseling while ϵ_t represents a white noise process.¹²

Several parameters were considered in the selection of this model.

Autoregressive orders of $p=0, \dots, 10$ and lags of $s=0, \dots, 5$ were examined. The parameters of $p=7$ and $s=1$ exhibited the lowest AICc of 10.29448 as can be seen in Table 4.3.

The current term ($t=0$) was included in this model for the independent variables due to the nature of the processes by which employers and job seekers used the UDES during this period. Many of the activities took place within the same month. For

¹² Following Belsley, Kuh, and Welsch (1980), tests were performed for the presence of multicollinearity across independent variables along with Variance Inflation Factor analysis. No indication of multicollinearity was present across the independent variables.

example, when a job seeker came to the UDES to file a UI claim, he or she needed to immediately register for the labor exchange if they were not returning to their employer at a later date. This fulfills the “work test” requirement mandated by UI law. Thus, filing an initial UI claim and registering for the labor exchange are likely to occur not only in the same month, but on the same day. Similarly, when the job seeker explores the job opportunities at the UDES, they typically have to register in order to get referred for that job or even to apply. Thus, new applications tend to occur in the same month the job seeker identifies an intriguing job opportunity.

4.3.1 Employer Behavior: Job Openings Posted

The results of the employer regression analysis can be viewed in Table 4.4 while the *F*-Test results for all the variables are displayed in Table 4.5. The regression results indicate statistically significant autoregressive terms at $t-1$ and $t-3$ which exhibit opposite influences on the dependent variable j , reflecting a cycle of employer behavior that fluctuates over 4 months.

As Table 4.4 indicates, unemployment plays a significant role in employer participation on the UDES platform. This is underscored in Table 4.5 where unemployment demonstrates a predictive relationship with job openings. Thus, employers post more jobs when unemployment is lower. This presents a potential problem for the USES: matching employers and job seekers when employment demand is constantly changing.

However, this could be offset if employer behavior exhibits indirect network

externalities. One way this could surface is if employers also post jobs because job seekers are available on the USES platform. Unfortunately, Table 4.4 and Table 4.5 do not indicate this is the case. New applicants have no statistical impact on the behavior of employers.

Yet, the research of Rees (1966) and Edwards and Krislov (1971) demonstrate that employer participation is linked to how well job seekers are screened by the SESA. This suggests that services to job seekers such as employment counseling and aptitude testing could generate indirect network externalities.

Employment counseling encompasses a broad range of activities with some leading to short term outcomes and some leading to those taking much longer. Table 4.4 and Table 4.5 reveal that employment counseling to job seekers has a positive impact on employer participation, confirming the presence of indirect network externalities. Because this analysis covers monthly data, this suggests it is counseling with short-term outcomes which prove to be influential with employers during this period. Thus, helping employers look past age or disabilities, or helping job seekers adjust their expectations both result in the UDES helping the employer find a qualified job seeker. This is similar to Yavas, Miceli, and Sirmans (2001) in which the intermediary serves in a bargaining role to facilitate the transaction.

There is some evidence to suggest that job seeker aptitude testing functions in a similar way. While the regression results indicate job seeker testing demonstrates a statistically significant impact on employer participation, the *F*-Tests indicate the predictive nature of job seeker testing is only significant at the 10% level. One possible

reason for the muted effect of testing is the extensive testing outreach conducted by UDES during this period. UDES frequently administered aptitude tests to high school students. These efforts could lead to counts of testing fluctuating independently of other labor exchange activities. Yet, taken together with employment counseling, one can observe some degree of indirect network externalities present in the behavior of employers.

By providing this quality verification process of a value-adding intermediary, the ES reduces the employer's risk of moral hazard as described by Spulber (1996a) and Li (1998). This finding also supports Bull, Ornati and Tedeschi (1987) who find that employers use private agencies over the PES to reduce sampling risk even when the private agencies may not have any technological advantage.

The impact of UI benefits to job seekers may also play a critical, positive role in helping SESA coordinate the participation of employers and job seekers. This could lead to increased employer participation over the longer term by maintaining a pool of labor for when the economy recovers. However, UI initial claims did not appear to influence employer participation in this chapter. This may be due to the fact that this impact takes a longer time to manifest than was captured by the model. This will need to be examined in later chapters that analyze annual data.

Yet, during the Foundational Period, in addition to periods of lower unemployment, it appears employers participated with the UDES not because of the size of the UDES labor pool, but because of the quality of this pool. Thus, because of indirect network externalities, as UDES provided employment counseling and testing services to

job seekers, it positively influenced employer participation.

4.3.2 Job Seeker Behavior: New Applications

The regression estimates for job seeker behavior are displayed in Table 4.6 with the results of the *F*-tests displayed in Table 4.7. Based on the significance of the autoregressive terms for new applicant counts, it appears the process of job seeker behavior spans a 6-month cycle.

As can be seen in Table 4.6, unlike employer participation, employment demand does not have a direct bearing on the participation of job seekers. However, because of the statistical significance of initial claims and strong correlation between unemployment and initial claims (0.47753), employment demand does appear to play at least a limited role. However, these results suggest that job seekers are more likely to participate when unemployment is higher. This complicates the role of the USES in that employers are more likely to participate when unemployment is lower.

This could be offset if job seeker behavior exhibited indirect network externalities similar to that of employers. Unfortunately, this does not appear to be the case as can be seen in Table 4.6. The presence of job openings alone has no impact on job seeker participation. In fact, only the prospect of UI benefits appears to persuade job seekers to participate.

One additional note is necessary relative to the impact of job seeker testing in Table 4.6. Its positive impact seems unexpected until one recalls the efforts of UDES during this time period. Employer demand for tested job seekers was significant and

UDES substantially ramped up testing efforts in the 1950s. One key part of this process was an outreach to Utah high schools in which students were administered competency tests. This outreach effort likely induced many high school students to register with UDES. Nevertheless, the *F*-Tests performed on job seeker testing yield no evidence testing predicts job seeker participation. This suggests testing growth was more coincident with job seeker registrations than causal.

4.4 Conclusion

The analysis of the post-World War II season of the UDES, what ultimately serves as the Foundational Period in terms of policies and practices, suggests indirect network externalities may have been present in the behavior of employers but not job seekers. Employers appear to have posted more job openings in response to increasing employment demand and the prospect of finding qualified job seekers on the UDES platform. By providing aptitude testing and employment counseling to job seekers, the UDES also provided quality validation and brokerage services that reduced the search costs for employers and encouraged their participation. Thus, there appears to be initial support for the hypothesis that the USES operates as a two-sided platform. This is further supported by the fact that it appears this influence appears to be driven by the usage of subsidies utilized by the USES to increase transaction volume.

The next chapter will examine a larger time period (1947 – 1981) in which the USES makes concerted efforts to engage the job seeker beyond the provision of UI benefits. Thus, the policies implemented by MDTA and CETA will be examined. While

the breadth of variables available in this chapter is not available for this extended series, the analysis of the next chapter will examine whether these policy changes were effective in altering employer and job seeker behavior.

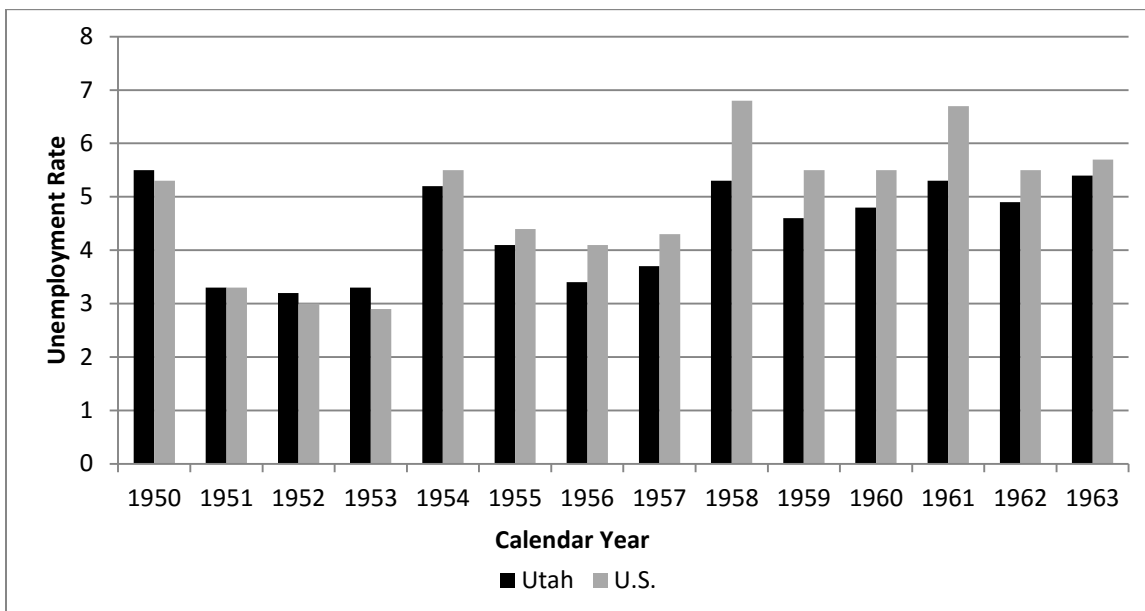


Figure 4.1. Utah vs. United States,¹³ average annual unemployment rate, 1950 - 1963¹⁴

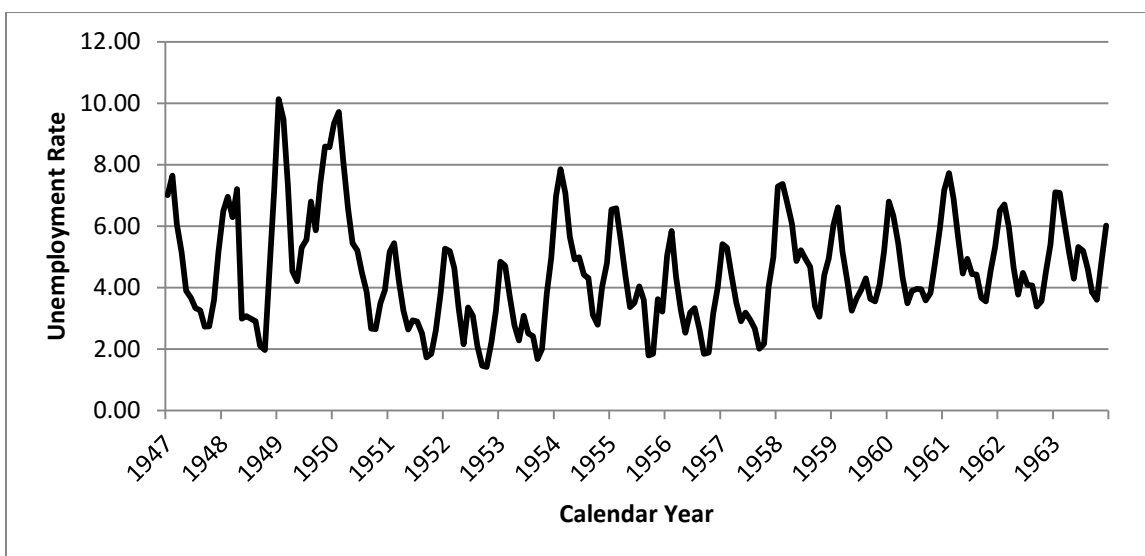


Figure 4.2. Monthly, seasonally unadjusted unemployment rate in Utah, 1947 - 1963¹⁵

¹³ Source: Utah Department of Workforce Services and Bureau of Labor Statistics

¹⁴ Comparable unemployment rate data are not available prior to 1950.

¹⁵ Source: Utah Department of Workforce Services

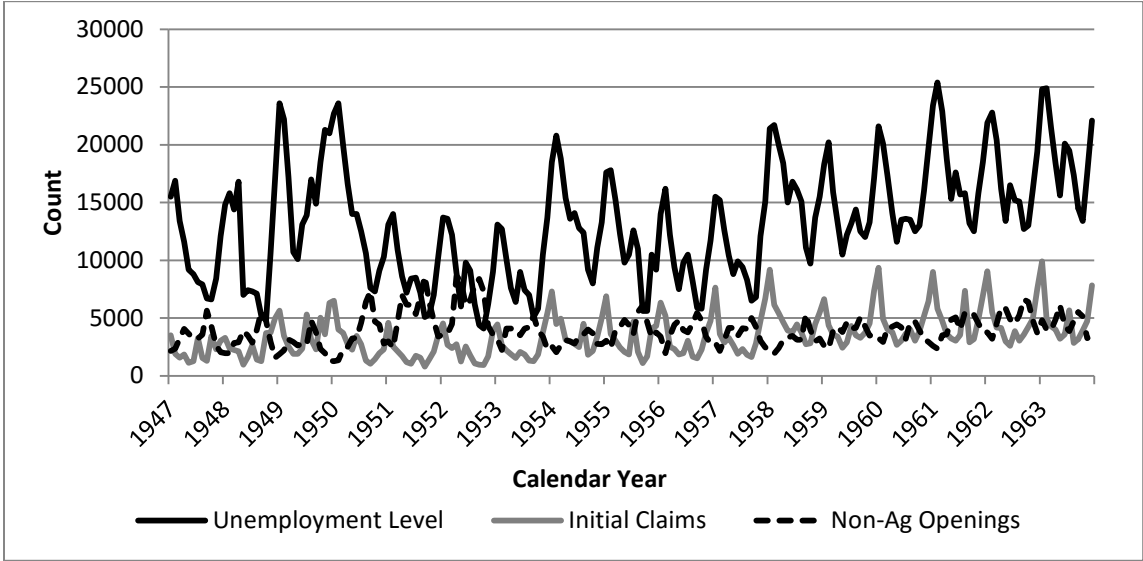


Figure 4.3. Monthly, seasonally unadjusted Utah unemployment, UI initial claims and UDES nonagricultural job openings, 1947 - 1963¹⁶

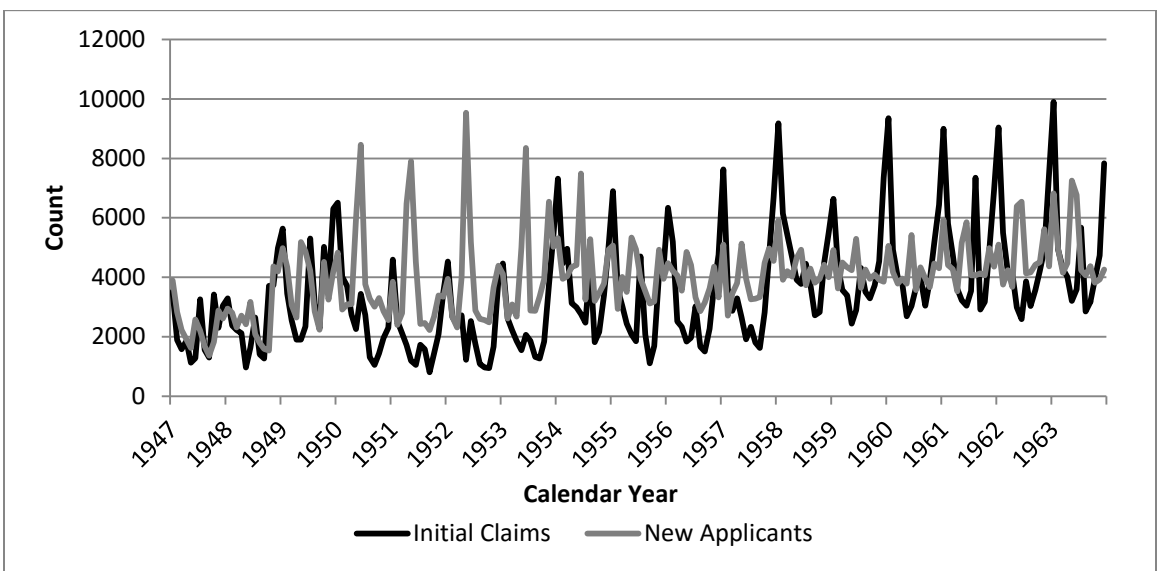


Figure 4.4. Monthly, seasonally unadjusted Utah UI initial claims and UDES new applicants, 1947 - 1963¹⁷

¹⁶ Source: Utah Department of Workforce Services
¹⁷ Source: Utah Department of Workforce Services

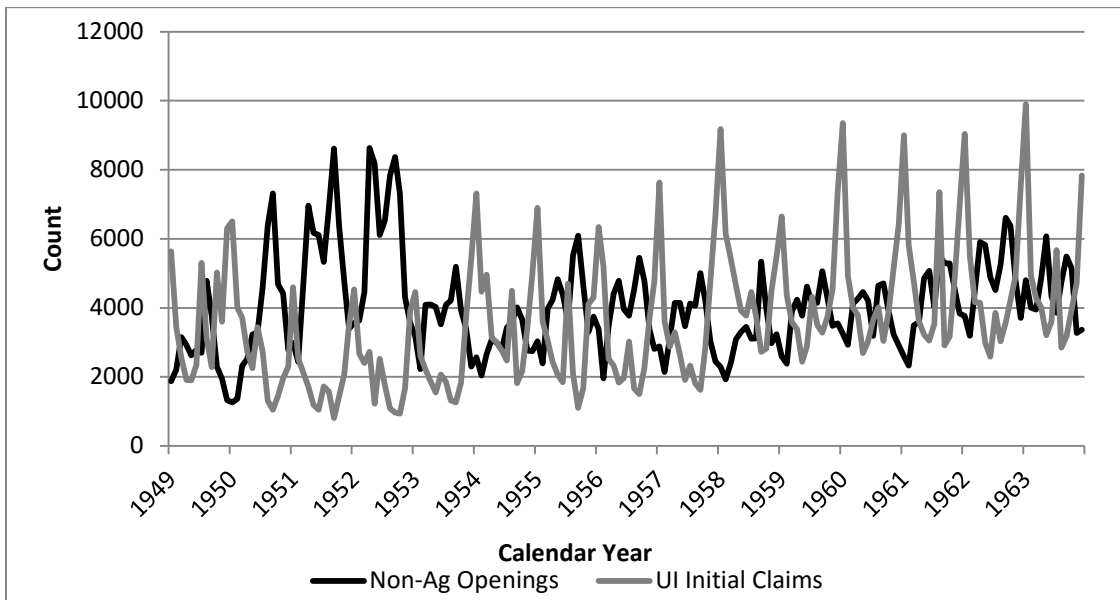


Figure 4.5. Monthly, seasonally unadjusted counts of UDES nonagricultural job openings and Utah UI initial claims, 1947 – 1963¹⁸

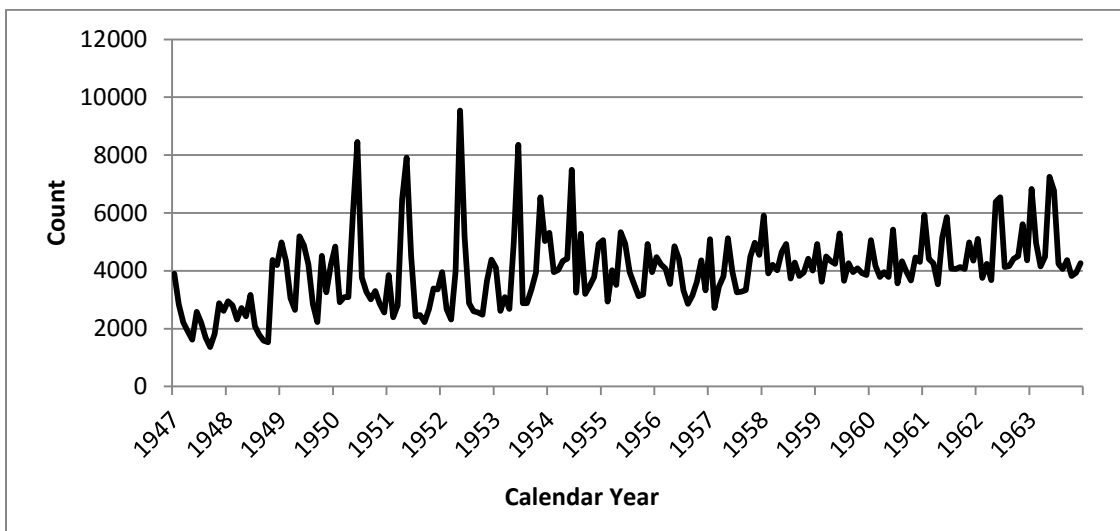


Figure 4.6. Monthly, seasonally unadjusted counts of UDES new applicants, 1947 – 1963¹⁹

¹⁸ Source: Utah Department of Workforce Services

¹⁹ Source: Utah Department of Workforce Services

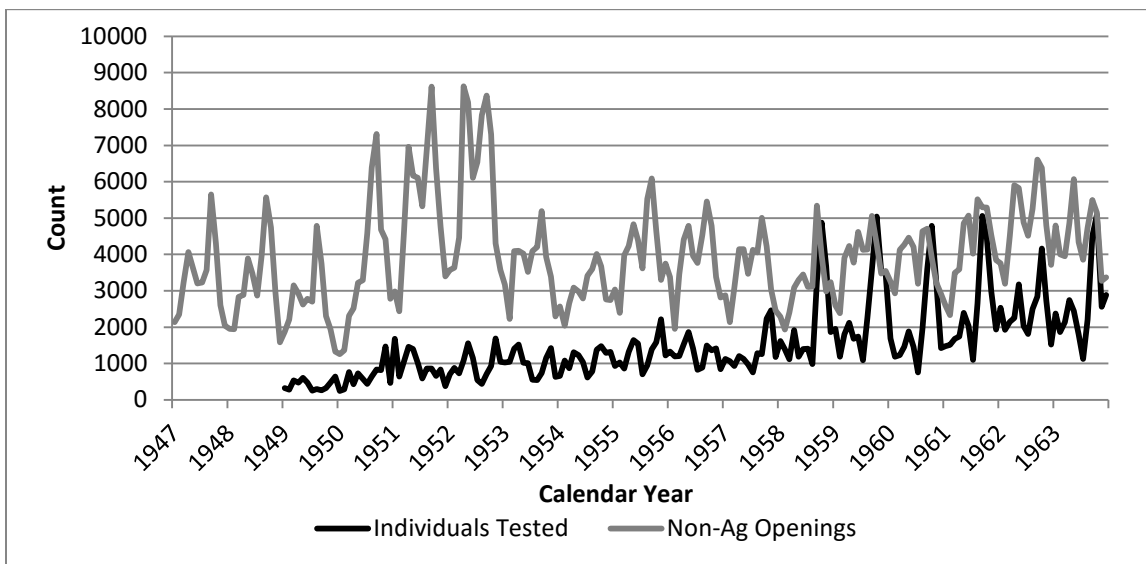


Figure 4.7. Monthly, seasonally unadjusted counts of UDES individuals tested and nonagricultural job openings, 1947 – 1963²⁰

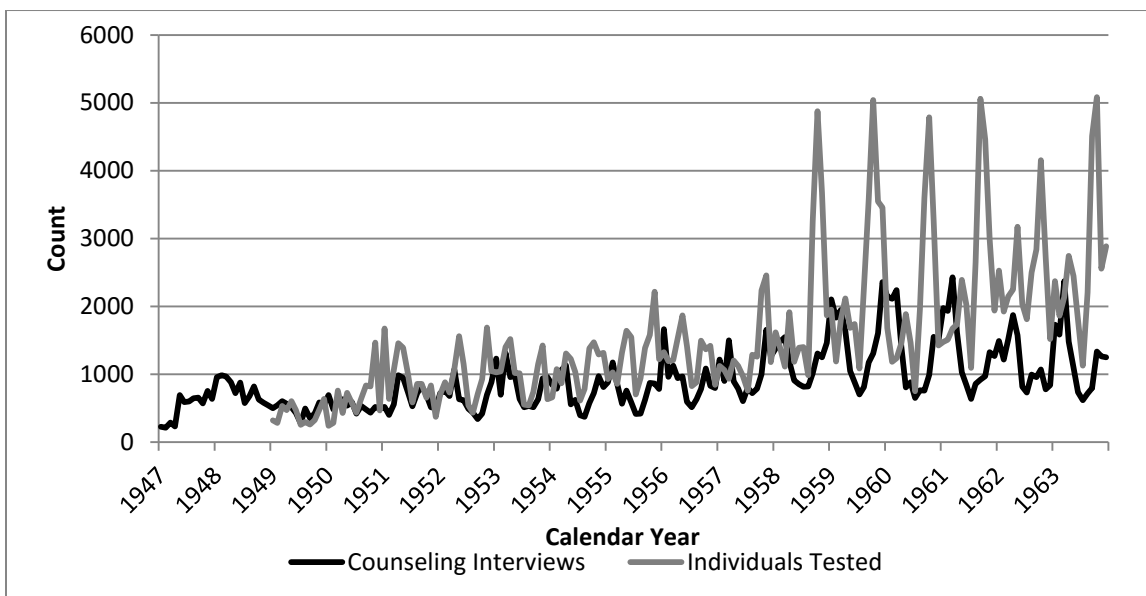


Figure 4.8. Monthly, seasonally unadjusted counts of UDES counseling interviews and individuals tested, 1947 – 1963²¹

²⁰ Source: Utah Department of Workforce Services

²¹ Source: Utah Department of Workforce Services

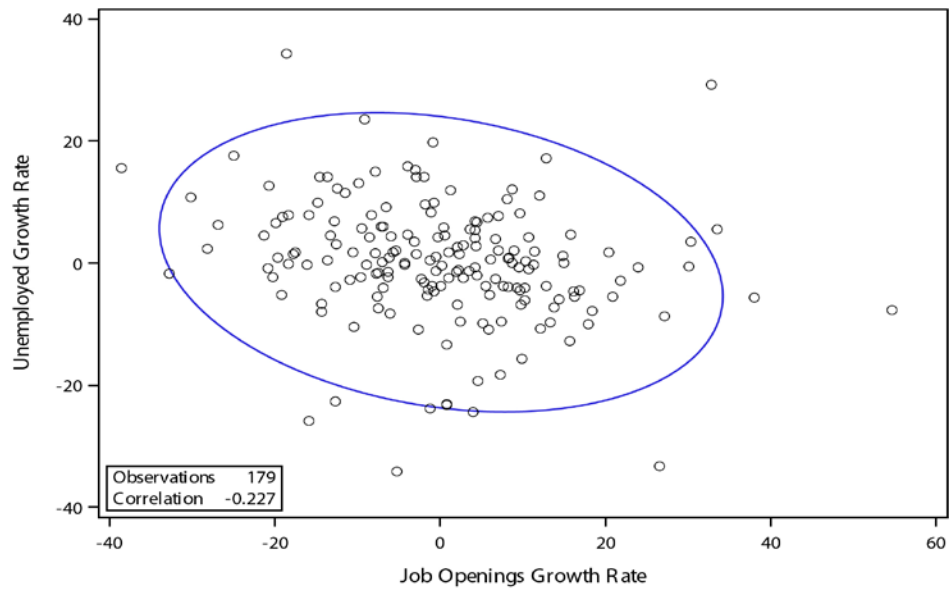


Figure 4.9. Scatter plot between Utah unemployed growth rate and UDES job openings growth rate with 95% prediction ellipse, 1947 – 1963

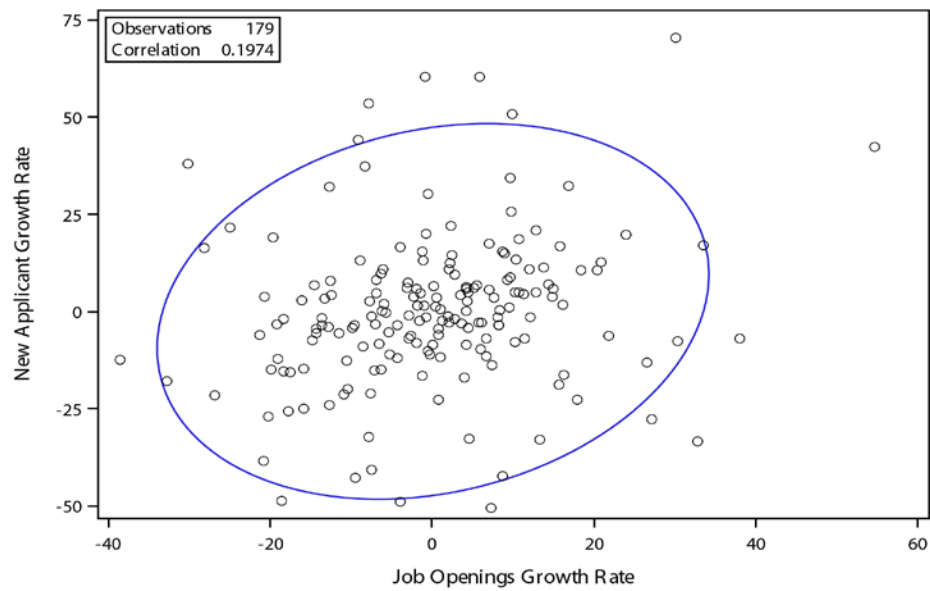


Figure 4.10. Scatter plot between UDES new applicant growth rate and job openings growth rate with 95% prediction ellipse, 1947 – 1963

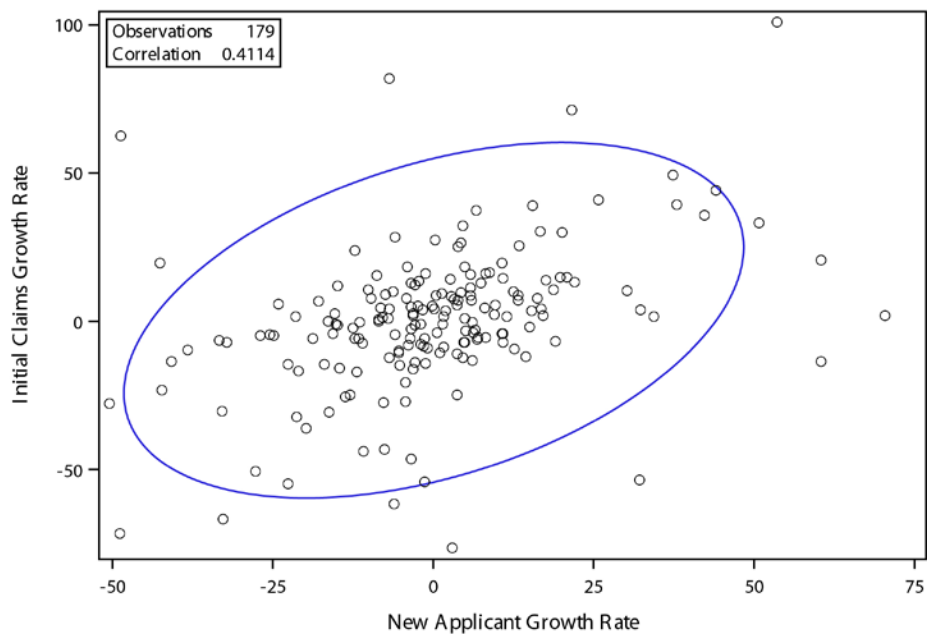


Figure 4.11. Scatter plot between UI initial claims growth rate and new applicant growth rate with 95% prediction ellipse

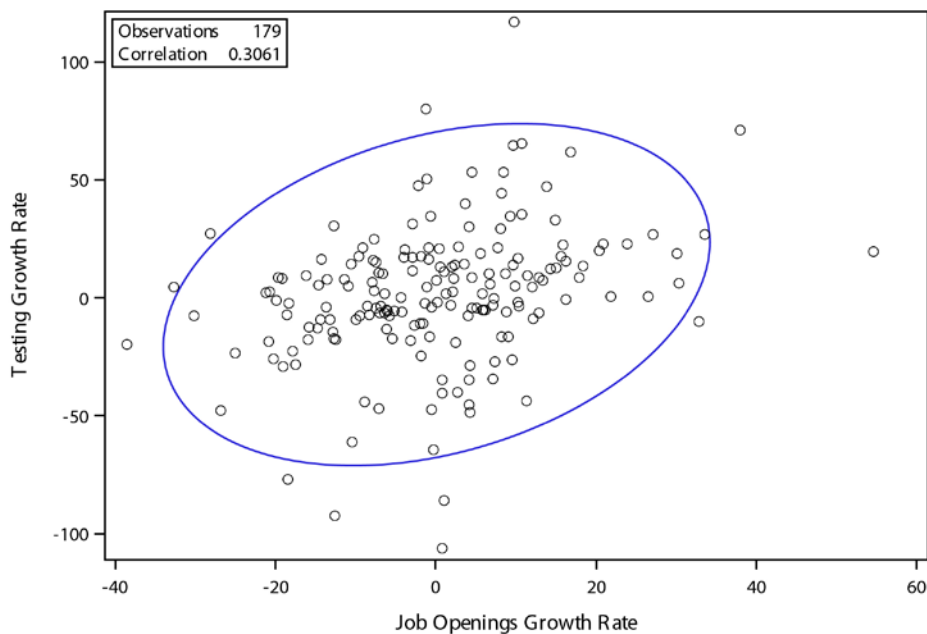


Figure 4.12. Scatter plot between UDES individuals tested growth rate and job openings growth rate, 1947 – 1963

Table 4.1. Descriptive statistics of seasonally adjusted growth rate variables

	<i>N</i>	Mean	<i>SD</i>	Median	Minimum	Maximum
Job Openings	179	0.10556	13.73221	0.03424	-38.51956	54.66103
Unemployed	179	0.12574	9.87544	0.02272	-34.13062	34.34410
Initial Claims	179	0.36065	24.10734	0.97228	-76.36381	100.85001
New Applicants	179	0.06097	19.45062	-1.19116	-50.52624	70.36068
Individuals Tested	179	1.35486	29.19926	1.87326	-106.27850	116.97896
Counseling Interviews	179	0.52713	21.10861	-0.87173	-57.18709	56.88019

Table 4.2. Pearson Correlation coefficients of growth rates

	Job Openings	Unemployed	Initial Claims	New Applicants	Individuals Tested	Counseling Interviews
Job Openings	1.00000	-0.22694 (0.0023)	-0.06581 (0.3814)	0.19739 (0.0081)	0.30608 (<.0001)	0.28333 (<.0001)
Unemployed	-0.22694 (0.0023)	1.00000	0.47753 (<.0001)	0.11766 (0.1167)	-0.00165 (0.9825)	0.00575 (0.9391)
Initial Claims	-0.06581 (0.3814)	0.47753 (<.0001)	1.00000	0.41140 (<.0001)	0.09691 (0.1969)	-0.01577 (0.8340)
New Applicants	0.19739 (0.0081)	0.11766 (0.1167)	0.41140 (<.0001)	1.00000	0.23289 (0.0017)	0.12121 (0.1060)
Individuals Tested	0.30608 (<.0001)	-0.00165 (0.9825)	0.09691 (0.1969)	0.23289 (0.0017)	1.00000	0.20695 (0.0054)
Counseling Interviews	0.28333 (<.0001)	0.00575 (0.9391)	-0.01577 (0.8340)	0.12121 (0.1060)	0.20695 (0.0054)	1.00000

Table 4.3. Corrected Akaike Information Criterion results

		Lag of Independent Variables					
		0	1	2	3	4	5
AR	0	10.76032	10.75793	10.78339	10.80091	10.84904	10.89368
	1	10.45687	10.43726	10.45097	10.45617	10.47954	10.54160
	2	10.36335	10.36738	10.39752	10.42021	10.44680	10.50888
	3	10.36118	10.35790	10.39424	10.43262	10.46674	10.51579
	4	10.34209	10.34513	10.38760	10.44269	10.49549	10.54868
	5	10.35788	10.36243	10.41616	10.48023	10.54925	10.59626
	6	10.35533	10.37217	10.43777	10.51839	10.57453	10.62997
	7	10.29612	10.29448	10.35467	10.43032	10.50907	10.57172
	8	10.33385	10.33778	10.39193	10.47135	10.52914	10.59337
	9	10.34712	10.35307	10.42092	10.49421	10.55026	10.62036
	10	10.40642	10.41212	10.48514	10.57249	10.62416	10.71129

Table 4.4. Regression results for employer behavior

Variable	Estimate	Standard Error	t Value	Pr > t
Counseling Growth Rate _t	0.11235	0.04434	2.53	0.0123
Counseling Growth Rate _{t-1}	-0.00920	0.04428	-0.21	0.8357
Initial Claims Growth Rate _t	0.06732	0.05038	1.34	0.1835
Initial Claims Growth Rate _{t-1}	-0.01137	0.05223	-0.22	0.8279
Testing Growth Rate _t	0.07568	0.03273	2.31	0.0221
Testing Growth Rate _{t-1}	-0.03985	0.03466	-1.15	0.2521
Unemployed Growth Rate _t	-0.51809	0.11465	-4.52	0.0001
Unemployed Growth Rate _{t-1}	-0.15733	0.11154	-1.41	0.1605
New Applicant Growth Rate _{t-1}	0.09155	0.05919	1.55	0.1240
New Applicant Growth Rate _{t-2}	-0.02236	0.06802	-0.33	0.7428
New Applicant Growth Rate _{t-3}	-0.06646	0.06982	-0.95	0.3427
New Applicant Growth Rate _{t-4}	-0.11827	0.06814	-1.74	0.0847
New Applicant Growth Rate _{t-5}	-0.02094	0.06610	-0.32	0.7518
New Applicant Growth Rate _{t-6}	-0.01054	0.06176	-0.17	0.8647
New Applicant Growth Rate _{t-7}	-0.01760	0.05321	-0.33	0.7412
Job Openings Growth Rate _{t-1}	-0.44839	0.07873	-5.70	0.0001
Job Openings Growth Rate _{t-2}	-0.14053	0.08276	-1.70	0.0916
Job Openings Growth Rate _{t-3}	0.19982	0.08198	2.44	0.0160
Job Openings Growth Rate _{t-4}	0.04991	0.08096	0.62	0.5385
Job Openings Growth Rate _{t-5}	0.01786	0.08336	0.21	0.8306
Job Openings Growth Rate _{t-6}	0.01314	0.08006	0.16	0.8699
Job Openings Growth Rate _{t-7}	-0.00689	0.07149	-0.10	0.9234

Table 4.5. *F*-Test results for employer behavior

Variable	DF	F Value	Pr > F
All	F(15, 149)	4.43	<.0001
New Applicants	F(7,149)	1.03	0.4134
Unemployment	F(2,149)	9.44	0.0001
Initial Claims	F(2,149)	0.14	0.8727
Testing	F(2,149)	2.68	0.0717
Counseling	F(2,149)	4.45	0.0133

Table 4.6. Regression estimates for job seeker behavior

Variable	Estimate	Standard Error	<i>t</i> Value	Pr > <i>t</i>
Counseling Growth Rate _{<i>t</i>}	0.08027	0.06074	1.32	0.1883
Counseling Growth Rate _{<i>t</i>-1}	0.10202	0.06066	1.68	0.0947
Initial Claims Growth Rate _{<i>t</i>}	0.34099	0.06901	4.94	0.0001
Initial Claims Growth Rate _{<i>t</i>-1}	0.18470	0.07154	2.58	0.0108
Testing Growth Rate _{<i>t</i>}	0.09462	0.04483	2.11	0.0365
Testing Growth Rate _{<i>t</i>-1}	-0.01409	0.04748	-0.30	0.7670
Unemployed Growth Rate _{<i>t</i>}	-0.18694	0.15705	-1.19	0.2358
Unemployed Growth Rate _{<i>t</i>-1}	0.00413	0.15279	0.03	0.9784
Job Openings Growth Rate _{<i>t</i>-1}	0.08550	0.10785	0.79	0.4292
Job Openings Growth Rate _{<i>t</i>-2}	-0.09115	0.11337	-0.80	0.4227
Job Openings Growth Rate _{<i>t</i>-3}	-0.04636	0.11230	-0.41	0.6803
Job Openings Growth Rate _{<i>t</i>-4}	-0.10944	0.11090	-0.99	0.3253
Job Openings Growth Rate _{<i>t</i>-5}	-0.09998	0.11419	-0.88	0.3827
Job Openings Growth Rate _{<i>t</i>-6}	-0.13346	0.10967	-1.22	0.2256
Job Openings Growth Rate _{<i>t</i>-7}	-0.00713	0.09792	-0.07	0.9420
New Applicant Growth Rate _{<i>t</i>-1}	-0.60397	0.08108	-7.45	0.0001
New Applicant Growth Rate _{<i>t</i>-2}	-0.46552	0.09318	-5.00	0.0001
New Applicant Growth Rate _{<i>t</i>-3}	-0.38225	0.09564	-4.00	0.0001
New Applicant Growth Rate _{<i>t</i>-4}	-0.35214	0.09334	-3.77	0.0002
New Applicant Growth Rate _{<i>t</i>-5}	-0.35024	0.09054	-3.87	0.0002
New Applicant Growth Rate _{<i>t</i>-6}	-0.21101	0.08460	-2.49	0.0137
New Applicant Growth Rate _{<i>t</i>-7}	-0.13472	0.07288	-1.85	0.0665

Table 4.7. *F*-Test results for job seeker behavior

Variable	DF	<i>F</i> Value	Pr > <i>F</i>
All	F(15, 149)	3.77	<.0001
Job Openings	F(7,149)	1.26	0.2724
Unemployment	F(2,149)	0.63	0.5351
Initial Claims	F(2,149)	12.54	<.0001
Testing	F(2,149)	1.44	0.2413
Counseling	F(2,149)	0.76	0.4679

CHAPTER 5

THREE POLICY REGIMES: 1947 - 1981

5.1 Background

The USES, together with its partner SESA, operate a public labor exchange platform. This paper investigates whether or not that this platform is two-sided, giving the ability for USES policy to coordinate the behavior of employers and job seekers and maximize transaction volume (Evans, 2003). This coordination would come by way of strategic subsidies implemented as various services provided by USES to encourage employer and job seeker participation.

One feature of two-sided platforms is the presence of indirect network externalities in the behavior of the agents using the platform: One group of agents (Group B) will only participate on the platform if another group of agents (Group A) participates first. Therefore, the degree to which the intermediary can provide strategic subsidies to Group A will likely determine the intermediary's ability to influence the participation of both Group A and Group B.

The previous chapter analyzed monthly administrative data from the UDES during the Foundational Period of the USES (1947 – 1963) to test this hypothesis. The analysis found some evidence of indirect network externalities in the presence of

employer behavior. Employers post more jobs as employment demand increases and if they believe qualified job seekers use the USES platform as well. By providing employment counseling and aptitude testing to job seekers, UDES was able to positively influence employers to participate.

This chapter plays a critical role in the next step of the analysis as it captures a longer history of UDES activities and subsequently, a better understanding of employer and job seeker behavior. In addition, this longer period of time encompasses two additional policy regimes that placed greater emphasis on the provision of services to job seekers. Both the MDTA and CETA legislation packages, along with the corresponding labor-focused programs, attempted to develop a far more sophisticated job seeker development infrastructure. This data set will facilitate the analysis of whether these policy shifts influenced the participation of employers and job seekers.

5.1.1 Historical Context

During the early 1960s, the USES underwent a significant policy shift. Following World War II, and throughout the 1950s, the SESA were largely focused on finding the most qualified candidates for employers who used its service. However, this focus dramatically shifted to the job seeker during the 1960s.

One of the first signs of change occurred during President Kennedy's first Economic Message to Congress in which he directed the Secretary of Labor "to take necessary steps to provide better service for unemployed insurance claimants and other job applicants registered with the United States Employment Service" (Levitan, 1964,

p.7).

Substantial job seeker-focused legislation also became the hallmark of the 1960s. The Area Redevelopment Act of 1961 (ARA) required SESA offices to provide unemployment information to the U.S. Department of Commerce for areas experiencing economic distress. The U.S. Department of Commerce would then use the information to determine federal assistance. In addition, the SESA assisted in the training efforts for the unemployed in economically depressed areas by selecting job seekers to be trained and placing them in jobs once training was complete (Ainsworth, 1991).

In addition, three significant pieces of legislation directed a large portion of SESA resources away from its established labor exchange activities. The Manpower Development and Training Act of 1962 (MDTA), the Vocational Education Act of 1963, and the Economic Opportunity Act of 1964 (EOA) focused the SESA on job training and human resource development activities. The EOA was actually part of the War on Poverty legislation established in 1964 that led to a reorientation of the USES. The SESA would now seek out the disadvantaged rather than waiting for them to come to the SESA to apply for services (Claque & Kramer, 1976). By 1965, the SESA concentrated much of its efforts on low-income and disadvantaged workers (Ainsworth, 1991; Balducchi, 1997).

Similarly, the MDTA sought to locate jobs for as many of the unemployed as possible, upgrade the labor force and provide an escape from poverty (Clague & Kramer, 1976). In order to fully comply with these objectives, the USES had to adopt an entirely new approach to its operations and turn its local offices into “manpower service

agencies” (Levitan & Mangum, 1967). This new emphasis is evident in the words of Louis Levine who assumed the role of ES Director in 1962:

The ES “shall not operate merely as a system of labor exchanges but must take on expanded responsibilities as a manpower agency concerned with all aspects of manpower. Each local office must serve as the local community manpower center and, beyond that, must also function in a strongly-linked nationwide network of offices operating to meet national manpower purposes and goals.” (quoted in Nemore & Mangum, 1968, p. 8)

With this new approach came different performance goals. For instance, the SESA had to follow a rule where one-third of placements involved less qualified job seekers (Clague & Kramer, 1976). Frank Cassell, who became administrator of the USES early in 1966, described the change in mission from “screening out” to “screening in” (Levitan & Mangum, 1967).

Later, in FY 1967, Operation Mainstream was launched with the goal of aiding unemployed workers over the age of 55 who lacked in-demand skills by placing them in unsubsidized employment. While this program was typically sponsored by Community Action Agencies (CAA's), the SESA offices were called upon to provide the placement services when the CAA's were unable to do so (Clague & Kramer, 1976).

This focus continued into the 1970s. For example, under the Nixon administration, the departments of Health, Education, and Welfare and the Department of Labor sifted through AFDC rolls to locate employable persons. The SESA would then attempt to place these individuals in training or employment. In some instances, placement of WIN clients actually replaced ES activities directed toward UI claimants (Clague & Kramer, 1976).

The 1970s also featured the “new federalism” policy of the Nixon Administration due to the numerous failed attempts of the 1960s legislative efforts to meet local needs. New federalism maintained that the federal government is the best source of tax revenue but that local governments are in the best position to manage programs to respond to local needs. This local bias eventually led to the development of the Comprehensive Employment and Training Act (CETA) in 1973 which replaced MDTA in 1962, emphasizing more localized control over training efforts.

While CETA still reflected a desire to provide training to job seekers, it also divested much of the job training efforts away from the SESA and reestablished the labor exchange activities as the central purpose of the SESA (Balducchi, 1997). This enabled SESA offices to focus on improving employer relations through the use of the Employer Services Improvement Program (ESIP). This program established Employer Advisory Committees (EACs) that would coordinate with task forces comprised of personnel from local ES offices designed to improve services to employers and subsequently increase employer usage of ES services. This program replaced the Employer Service Representatives (ESRs) which served a relatively small role during the MDTA years (Chadwin et al., 1977). In addition, the USES issued a directive in 1975 admonishing SESA not to divert ES staff to UI activities. It is not clear to what degree this directive was actually followed (Chadwin et al., 1977).

5.1.2 National Context

SESA administrative data for this period are quite limited. Consequently, only Utah will be analyzed. However, this necessitates an understanding of how well Utah reflects the United States labor market. As can be seen in Figure 5.1, while the Utah and United States unemployment rates were relatively similar from 1950 to 1956, more significant differences can be observed from 1957 through 1981. From 1957 through the end of the Foundational Period, Utah labor demand was much stronger than that in the United States as a whole. However, during the entirety of the MDTA period, 1963 to 1971, labor demand across the United States was far stronger than in Utah. This discrepancy was at its highest during 1969.

However, during the CETA period, Utah experienced a much lower unemployment rate. In fact, while the United States witnessed its highest levels during this period in from 1973 to 1975, Utah's weaker labor demand was leveling off. From 1975 through 1979, the unemployment rates of Utah and United States dropped significantly only to begin climbing again toward the end of this period.

5.1.3 Theoretical Context

This policy shift focused the intermediary role of the SESA from one that exploited the indirect network externalities in employer behavior to one that prioritized the underprivileged job seeker. During the previous period, the SESA operated with the perspective that employers will continue to participate if the SESA focus on referring the most qualified candidates to employers. However, during the 1960s and 1970s the SESA

shifted to an intermediary role that sought to “add value” to job seekers through vocational training aimed at increasing their wage earning ability and employment potential.

This desire to add value to job seekers lessened the focus on providing the job seeker testing subsidy which benefitted employers in the past by reducing the moral hazards of using the SESA. In fact, when the USES incorporated the policy of requiring one-third of placements to come from lesser qualified candidates, this subsidy to employers was substantially eroded. It is not surprising, then, that Rees (1966), Edwards and Krislov (1971), and Bull, Ornati and Tedeschi (1987) all find that employers were dissuaded from using the SESA due to poor screening efforts.

5.1.4 Testing the Hypothesis

This chapter will analyze the UDES administrative data from 1947 to 1981 to further test the hypothesis that the USES in partnership with SESA operates as a two-sided platform and can use strategic subsidies to coordinate employer and job seeker behavior. While the data set used is longer than that of the previous chapter, its limited scope constrains the extent of the investigation. Thus, the analysis in this chapter will explore (1) how employment demand affects employer participation, (2) the impact of job seeker participation on employer participation, (3) the impact of UI benefits on the participation of employers, (3) how employment demand affects job seeker participation, (4) whether job seeker behavior is influenced by the number of job openings posted, (5) the impact of UI benefits on job seeker participation, and (6) the impact policy regime

changes had on employer and job seeker participation.

5.2 Data

5.2.1 Data Sources

The data set used to test the hypothesis is an extension of the set used in the previous chapter which analyzed 1947 – 1963. The base data set was constructed uniquely for this analysis by the author from two U.S. government publications: the *Social Security Bulletin* (1947-1949) and the *Labor Market and Employment Security* monthly report (1949 – 1954) as well as annual reports published by the Utah Department of Employment Security (UDES) from 1947 to 1963. UDES operated the SES in Utah during this period of time in partnership with the USES.

To extend this data set, the author assembled data from 1964 to 1981 using ES activity counts published monthly in the UDES publication *The Employment Newsletter* and employment indicators published in UDES annual reports. UI data for this period were obtained from the *Unemployment Insurance Review* and *Unemployment Insurance Statistics* from 1964 to 1970 and directly from the USDOL from 1971 through 1981.

This combination of data sources produces a data set with four key monthly variables: unemployment levels, UI initial claims, job openings and new applicant counts. Unfortunately, counts of individuals tested and counseling interviews are not available at the monthly level for this time period.

The data elements that will be analyzed in this chapter have been described in the previous chapter. A brief review will be provided here as well.

5.2.1.1 Unemployment

Similar to the previous chapter, employment demand will be represented with unemployment levels. As a matchmaking intermediary, each SESA also has to contend with fluctuating aggregate demand and search costs for each participating group. Thus, it is expected that employers will post more jobs when unemployment is low and job seekers will thus require the UI subsidy to maintain participation when unemployment is high.

To provide context for this chapter, Figure 5.2 displays seasonally unadjusted unemployment levels divided by the labor force. In contrast to the previous chapter which ended in 1963, this chapter features declining unemployment to 1967 and then increasing until 1972. This cycle reflects the breadth of the MDTA legislation. During the CETA policy regime, unemployment was largely on the decline with the exception of an upswing in 1975 and later in 1981.

5.2.1.2 UI Initial Claims

UI Initial claims reflect counts of individuals attempting to claim UI benefits, not necessarily those who meet the requirements. Typically, workers file for UI when they cannot find a job; however, receiving UI benefits requires claimants to register for work at the SES unless they can expect to return to their employer after a particular season. Consequently, the filing of UI initial claims frequently leads to increases in SES job seeker registrations.

Figure 5.3 displays the relationship between new applicants and UI initial claims.

One difference between this series and the abbreviated series used in the previous chapter is the shift in relationship between new applicants and UI initial claims that takes place in the late 1960s and persists throughout the rest of the series. From the late 1960s to 1981, counts of new applicants appear to be consistently higher in relation to UI claims than for the first part of the series. This shift is likely due to the substantial legislation targeting job seekers during this period and encouraging their participation independent of market conditions.

This participation was made possible because many of these individuals were not working previously and subsequently not even eligible to receive UI benefits. However, the prospect of prioritized placement or subsidized training encouraged job seeker participation.

A similar phenomenon occurs with UI initial claims and job openings in 1973 as can be seen in Figure 5.4 where the relative magnitude of job openings increases when compared to initial claims. This may be due to the impact of CETA legislation and heavy emphasis on training prior to that point. It is possible that Job seekers were participating to get training (and thus no UI benefits) and as the economy recovered, employers posted jobs with UDES to access the trained workforce.

Nevertheless, despite this shift, UI initial claims continue to fluctuate in the opposite direction to job openings throughout this extended period. Thus, while training and legislation may have impacted job seeker and employer behavior, the two forces which have tended to drive job seeker participation in the past continued to move in opposite directions during this period as well.

5.2.1.3 New Applicants

New applicants are those job seekers who registered for SESA job services. Specifically, a new application is the initiation of a 12-month window for which a job seeker can use and later reuse SESA services. Thus, new applicants represent the event in which a job seeker creates a new registration for ES services.

As stated in the previous chapter, new applicant counts should not be confused with first time new applicants. For example, after making a new application, a job seeker may use the SES, get referred to a job, become unemployed and reactivate their registration. Under that scenario, there is one new application for that 12-month period.

As can be expected from previous analysis in this chapter, the policy shifts covered in this chapter will be most reflected in counts of new applicants. Figure 5.5 compares counts of new applicants with job openings. The implementation of the MDTA and CETA legislative efforts is immediately evident with the spike in new applicant counts in the 1960s as job seekers participate for the subsidy of training, not just the prospect of employment.

5.2.1.4 Job Openings

Employer participation on the USES platform is measured by counts of posted job openings. When employers were in need of workers for jobs at their firms, they voluntarily notified UDES. UDES in turn made an effort to notify job seekers registered with the UDES by posting these jobs on a public bulletin board giving rise to the term “job board.” UDES also worked to recruit workers for these jobs from the registered job

seeker pool.

Each job posted with UDES was counted as a job opening for reporting purposes. UDES reported these job openings across two categories: agricultural and nonagricultural. This classification was used because agricultural job openings tended to be temporary and highly seasonal in nature. Agricultural job openings also comprised a very small portion of total job openings, especially as the Utah economy developed over the next several decades. Consequently, while this research analysis will utilize the term “Job Openings” throughout, it will only examine counts of nonagricultural job openings.

The significance of aptitude testing for employers in the previous chapter would suggest the policy shift to MDTA will negatively impact the participation of employers due to the decreased emphasis on job seeker validation. Figure 5.6 displays counts of job openings with unemployment levels and suggests this prediction may have some validity. During the MDTA policy regime from 1963 to 1973, job openings appear flat even as employment demand fluctuates. This shift appears to end somewhat with the passing of CETA in 1974 as the relationship between unemployment and job openings appears to be restored.

It could be argued that lower job opening counts would be expected during periods of rising unemployment. However, the impact of MDTA actually affects job seekers in a similar fashion. Figure 5.7 displays counts of new applicants alongside unemployment levels. Note the similar behavior of new applicants and job openings. Despite increasing unemployment levels, there is little corresponding increase in new applicant counts. Similarly, this trend shifts with the onset of CETA in 1974.

5.2.1.5 Policy Indicator Variables

The impact on employer and job seeker behavior brought about by MDTA and CETA legislation necessitates a mechanism to isolate these policy regimes from the Foundational Period of 1947 to 1963. To that end, policy indicator variables were introduced to determine how the Foundational Period and CETA regimes compare to the MDTA period.

5.2.2 Transformations

Because counts of individuals tested did not begin until January 1949, the previous chapter had to shorten the data set so all variables had the same start date. However, because this data set does not include individuals tested, this data set can include data as far back as January 1947. Also, similar to the previous chapter, no outlying data points have been removed from the data set, even though The Korean War Conflict impacts each variable during the early portion of the 1950s.

In addition, because UDES did not make any seasonal adjustments to the reported data, each variable was adjusted for seasonality based on the X-12-ARIMA procedure developed by the United States Census Bureau. This seasonal adjustment was selected because of its common usage, including its use by the Bureau of Labor Statistics (BLS), the administrator of the unemployment reporting methodology. This approach, as opposed to including dummy variables, for example, better facilitates the introduction of this new data set because the seasonal adjustments are easily carried into the univariate and multivariate statistics.

Each data series was also converted to a natural log growth rate. The X-12-ARIMA approach simplified the final transformation which was the conversion to a natural log growth rate according to the formula found in Equation 5.1 below.

$$\hat{w}_t = \ln(x_t) - \ln(x_{t-1}) \quad (5.1)$$

5.2.3 Univariate and Bivariate Analysis

This chapter facilitates the ability to understand the relationship between the growth rates of these series across an USES policy shift beginning with MDTA in 1962. Before investigating these relationships, the properties of each series are examined.

Table 5.1 displays the descriptive statistics of each series. Both job openings and new applicants reflect a positive skew, with new applicants exhibiting the more substantial skew of the two. This could be the byproduct of two decades of job seeker focused policies included in the data set. This supposition appears to be strengthened with the negative skewness of unemployment during this same period although the positive skewness of UI claims diminishes this assertion somewhat.

Pearson correlation analysis was conducted on this data set similar to the previous chapter. As can be seen in Table 5.2, while many of the statistically significant relationships are the same as before, there are some differences. This is critical since this data set extends that of the previous chapter.

To further illustrate these correlations, scatter plots are provided. Each of these scatter plots also features a 95% prediction ellipse according to Equation 5.2 below,

where $\alpha = 0.05$.

$$\pi = \frac{2(n+1)}{n-2} F_{2,n-2}(1-\alpha) \quad (5.2)$$

One such difference is the relationship between new applicants and unemployment. From 1949 to 1963, the correlation was not sizeable and more importantly, not statistically significant. However, from 1947 to 1981, there is a 0.18308 correlation between the two that is statistically significant. This relationship can further be seen by the scatter plot in Figure 5.8. Thus, new applicant counts became much more linked with fluctuations in unemployment. This suggests usage of the UDES was tied more to employment demand rather than exploited indirect network externalities.

Nevertheless, the correlation between job openings and new applicant counts was slightly higher over this longer period of time than during 1949 – 1963 as evident in Figure 5.9. Similarly, the correlation between job openings and unemployment was less during this period as was the correlation between UI claims and unemployment. These relationships can be seen in Figure 5.10 and Figure 5.11, respectively.

5.3 Model Results

As in the previous chapter, to test the hypothesis, employer and job seeker UDES participation will be analyzed with a VARX(6,1) model across t months according to Equation 5.3 below:

$$\begin{pmatrix} j_t \\ n_t \end{pmatrix} = \sum_{i=1}^p \varphi_i j_{t-i} + \sum_{i=1}^r \theta_i n_{t-i} + \sum_{i=0}^s \beta_i u_{t-i} + \sum_{i=0}^s \gamma_i m_{t-i} + \epsilon_t \quad (5.3)$$

where $p=1,2$, $r=6$ and $s=1$, j_t denotes job openings, n_t represents new applicants, u_t and m_t , represent unemployment and UI initial claims while ϵ_t represents a white noise process.²²

Several parameters were considered in the selection of this model.

Autoregressive orders of $p=0,\dots,10$ and lags of $s=0,\dots,5$ were examined. The parameters of $p=6$ and $s=1$ exhibited the lowest AICc of 9.973061 as can be seen in Table 5.3.

As in the previous chapter, the current term ($t=0$) was included in this model for the independent variables due to the nature of employer and job seeker logistics when using the SES. Many of the activities took place within the same month such as when a job seeker files a UI claim, he or she needs to immediately register for the labor exchange if they were not returning to their employer at a later date. Similarly, when the job seeker explores the job opportunities at the SES, he or she typically must register in order to get referred for that job or even to apply. Thus, new applications tend to occur in the same day the job seeker identifies a potential job.

²² Following Belsley, Kuh, and Welsch (1980), tests were performed for the presence of multicollinearity across independent variables along with Variance Inflation Factor analysis. No indication of multicollinearity was present across the independent variables.

5.3.1 Employer Behavior: Job Openings Posted

The results of the employer regression analysis can be viewed in Table 5.4 while the *F*-Test results for all the variables are displayed in Table 5.5. The regression results indicate statistically significant autoregressive terms at $t-1$ and $t-2$ which exhibit negative influences on the dependent variable j , reflecting a cycle of employer behavior that fluctuates over 3 months. This is similar to the 4-month cycle observed in the previous chapter.

Consistent with the findings of the previous chapter, employers appear to post more jobs when unemployment is lower. This is evident in the regression results in Table 5.4 as well as the *F*-Tests in Table 5.5. Thus, the challenge remains for the USES to coordinate the behavior of employers when their demand for workers continues to fluctuate.

There also appears to be no indication of employers participating simply because of the number of job seekers available on the USES platform as is evidenced by the regression and *F*-Test results. No new application coefficients in the regression are statistically significant and the *F*-Test results for new applicants show no statistical significance either.

This is also consistent with the previous chapter as it was the presence of qualified job seekers on the USES platform that encouraged employer participation. With testing and employment counseling not being available for this data set, investigating further consistency between the time periods is unfortunately not possible.

The positive significance of initial claims on employer behavior in the regression

results seems to suggest some degree of employer participation predicated upon that of job seekers. But, given that fact that the *F*-Tests suggest very little predictive nature of this relationship, it seems most likely this is merely coincidental in nature. While unemployment and initial claims demonstrate a positive correlation (0.36772) as is evident in Table 5.2, it is likely that job openings and initial claims simply move in the same direction when initial claims are not correlated with unemployment. Thus, there appears to be no evidence of indirect network externalities present.

As mentioned in the previous chapter, it is possible that UI initial claims requires a much longer period to demonstrate its impact on employer participation. Consequently, the nature of this model may not have identified such an effect. However, the next two chapters analyze annual data and may provide a better vantage point.

Policy indicator variables were also included in the model to test for the significance of the Foundational Period policy regime of the previous chapter and the CETA regime compared to MDTA. The regression results and *F*-Tests indicate policy did not alter employer behavior during this period.

Thus, when viewing employer participation with UDES from 1947 to 1981, no evidence of indirect network externalities can be found. This may be the result of the limited scope of the data, as it was employment counseling and aptitude testing which generated indirect network externalities in the previous chapter. Unfortunately, these variables are not available in this data set.

5.3.2 Job Seeker Behavior: New Applications

The regression estimates for job seeker behavior are displayed in Table 5.6 with the results of the *F*-Tests displayed in Table 5.7. Based on the significance of the autoregressive terms for new applicant counts, it appears the process of job seeker behavior spans a 6-month cycle similar to the previous chapter.

Unlike the previous chapter, employment demand does demonstrate a significant impact on job seeker behavior. The regression and *F*-Test results indicate job seekers are more likely to participate when unemployment is higher. Unfortunately, this is the opposite of employers who are more likely to participate when unemployment is lower. Yet, if the USES operates as a two-sided platform, it will have the ability to utilize subsidies to coordinate the participation of employers and job seekers, offsetting their opposing participation inclinations.

In addition to higher unemployment, UI initial claims also exert a positive, predictive impact on job seeker participation. This can be seen in the regression and *F*-Test results. However, what also is clear is the lack of impact job openings has on job seeker participation. Consistent with the previous chapter, this suggests no evidence of indirect network externalities in the behavior of job seekers.

As was discussed in the employer analysis, to explore the role of policy regimes, policy indicators were included in the regression to determine whether the policies of the Foundational Period or CETA, relative to MDTA, influenced employer or job seeker behavior. As can be seen in the regression results in Table 5.6 and the *F*-Tests in Table 5.7, policy emphasis appears to exert no influence on the results. Thus, job seeker

participation was influenced only by employment demand and UI benefits during this period.

However, this lack of effect should not be construed as an indictment on the MDTA and CETA policies. These were the first substantial attempts by US DOL and related agencies to improve the outcomes of job seekers. Furthermore, because the USES was only one of many players in this effort, and often on the outside of the primary delivery of services, it is not surprising that policy appears to have no effect. In fact, it was the growing disparity and lack of coordination of services that continued past the period covered in this chapter that led to substantial reforms such as the ES Revitalization plan in 1992.

5.4 Conclusion

This chapter built upon the findings of Chapter 4 by investigating monthly UDES data from 1947 to 1981. This extended data series enabled the analysis of USES policy shifts that began with MDTA in 1962 and CETA in 1974. At the center of these shifts was a prioritization of the needs of job seekers over the needs of employers. Thus, UDES became less focused on providing the most qualified candidate to employers and more focused on ensuring disadvantaged job seekers were served.

However, in terms of UDES activity, the policy changes appeared to have no effect. Employers continued to post more jobs when unemployment was lower and job seekers continued to participate when unemployment was higher.

Unlike the previous chapter, no evidence of indirect network externalities were

evident in the behavior of employers or job seekers. However, this could simply be a function of the data set used. Employment counseling and aptitude testing, two services to job seekers that demonstrated a positive influence on employer participation in Chapter 4, are not available in this data set. Furthermore, it is possible the impact of UI initial claims on employer participation may be longer in duration and be more easily observed in the annual data sets in the upcoming chapters.

The next chapter will continue the analysis to an even broader historical context, examining annual data from 1947 to 2002. This will provide the longest series available to investigate employer and job seeker participation with the UDES as well as the role of the UI, aptitude testing and employment counseling subsidies. In addition, because this data set spans an even longer period of time, additional policy investigation will be possible as two additional regimes will be covered: JTPA and the ES Revitalization.

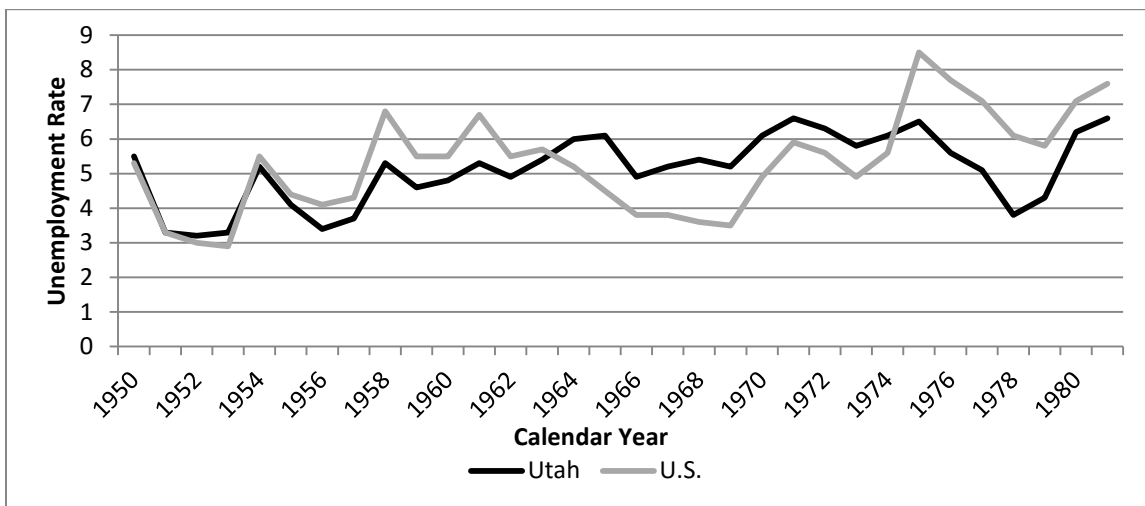


Figure 5.1. Utah vs. United States,²³ average annual unemployment rate, 1950 - 1981²⁴

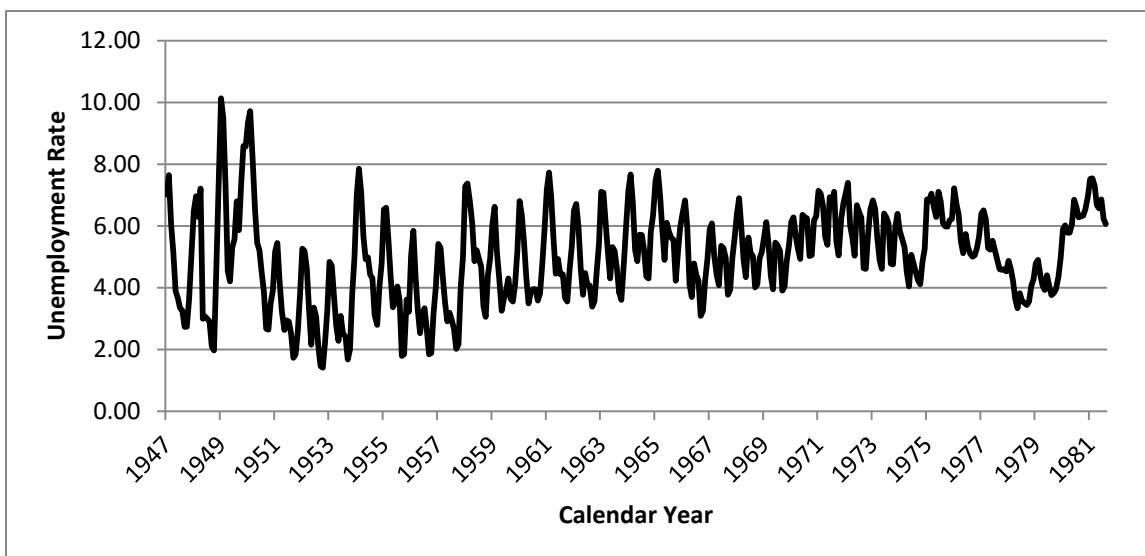


Figure 5.2. Utah monthly, seasonally unadjusted unemployment rate, 1947 - 1981²⁵

²³ Source: Utah Department of Workforce Services and Bureau of Labor Statistics

²⁴ Comparable unemployment rate data are not available prior to 1950.

²⁵ Source: Utah Department of Workforce Services

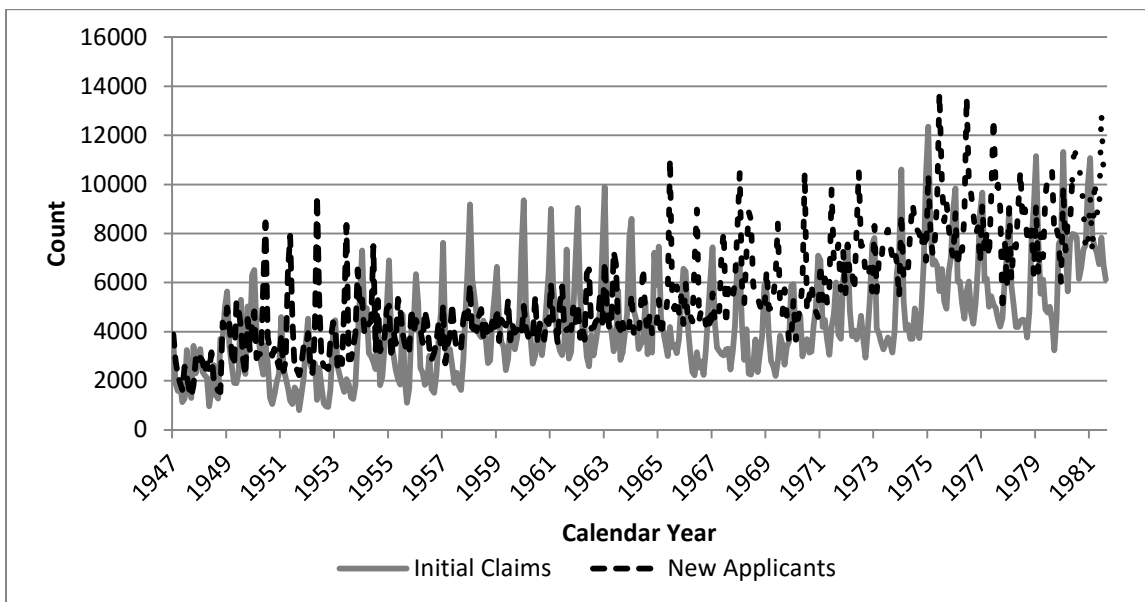


Figure 5.3. Monthly, seasonally unadjusted counts of Utah UI initial claims and UDES new applicants, 1947 - 1981²⁶

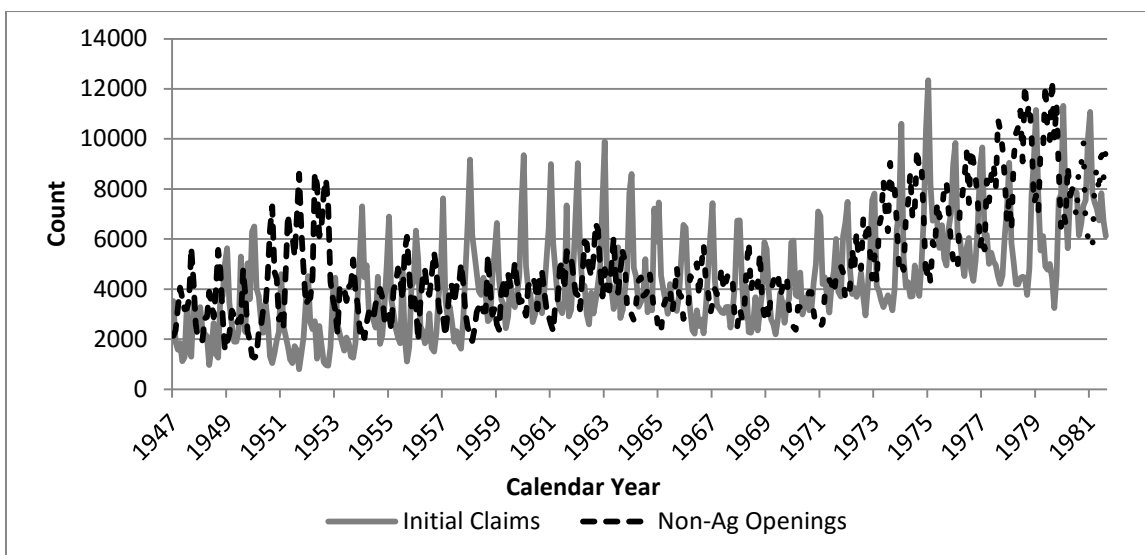


Figure 5.4. Monthly, seasonally unadjusted counts of Utah UI initial claims and UDES nonagricultural job openings, 1947 - 1981²⁷

²⁶ Source: Utah Department of Workforce Services

²⁷ Source: Utah Department of Workforce Services

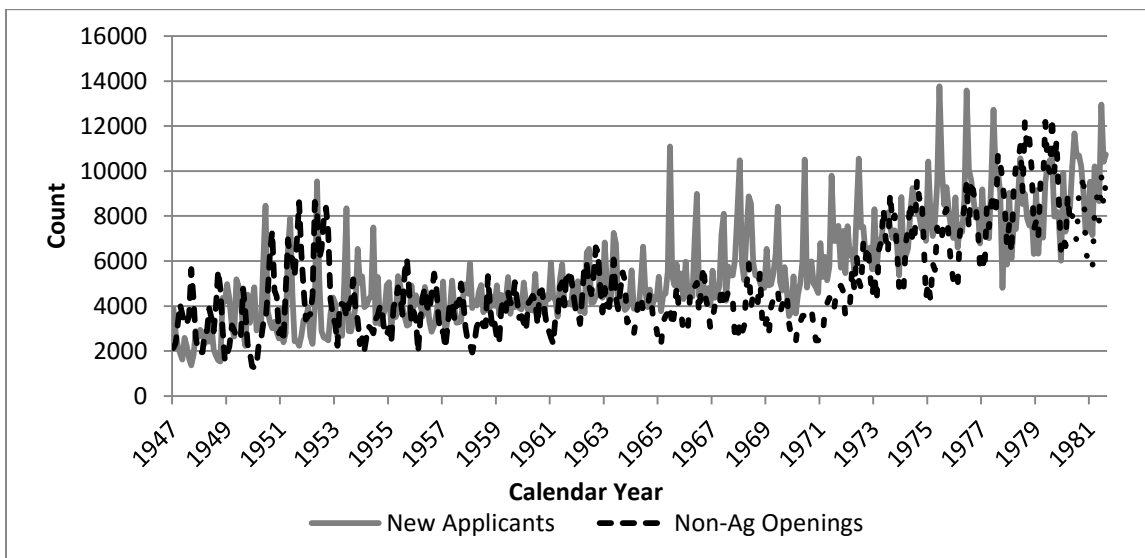


Figure 5.5. Monthly, seasonally unadjusted counts of UDES new applicants and nonagricultural openings, 1947 - 1981²⁸

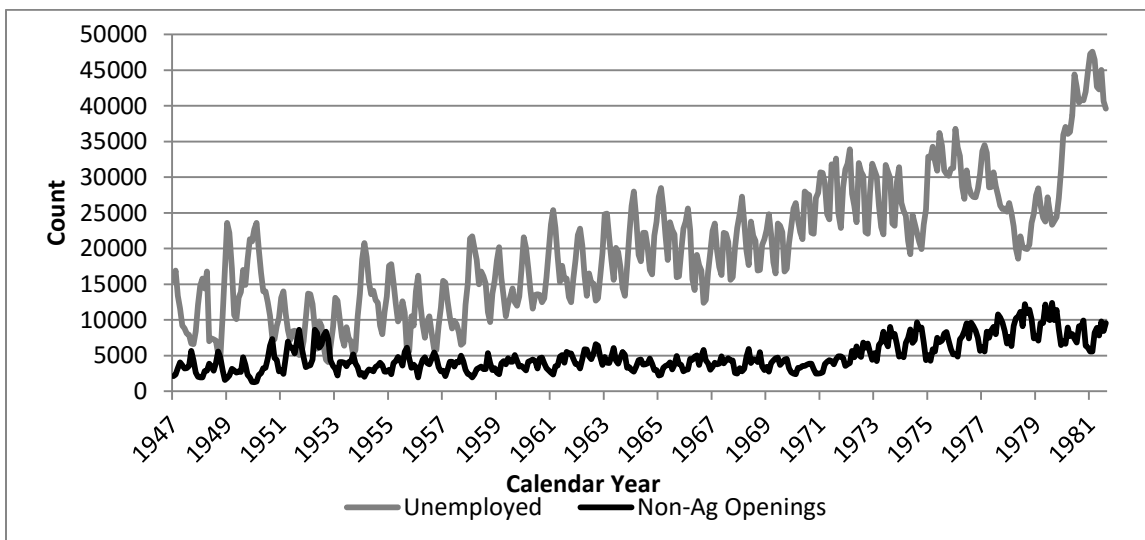


Figure 5.6. Monthly, seasonally unadjusted counts of Utah unemployment levels and UDES nonagricultural openings, 1947 - 1981²⁹

²⁸ Source: Utah Department of Workforce Services

²⁹ Source: Utah Department of Workforce Services

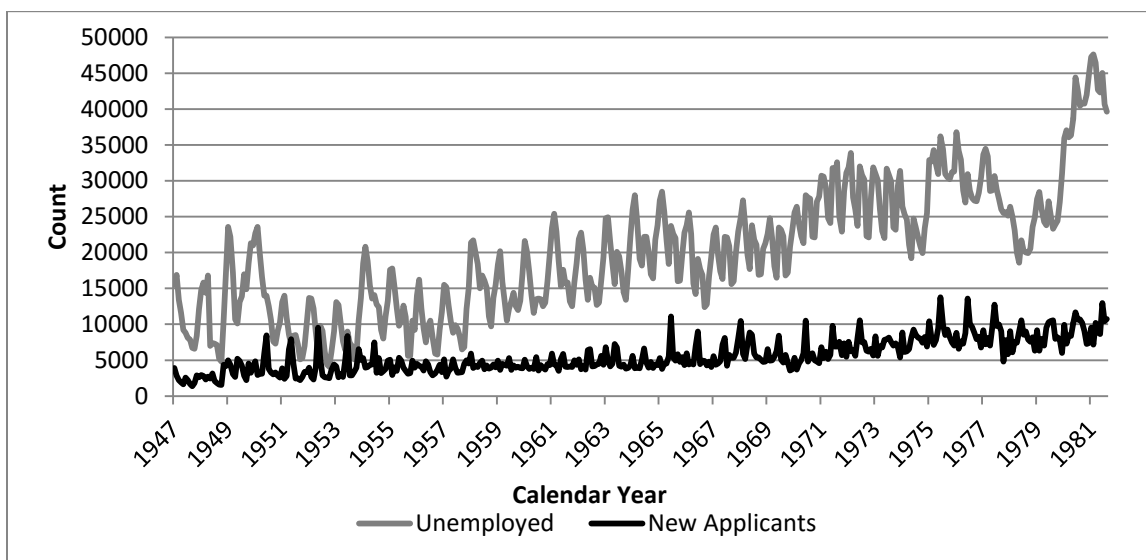


Figure 5.7. Monthly, seasonally unadjusted counts of Utah unemployment levels and UDES new applicants, 1947 – 1981³⁰

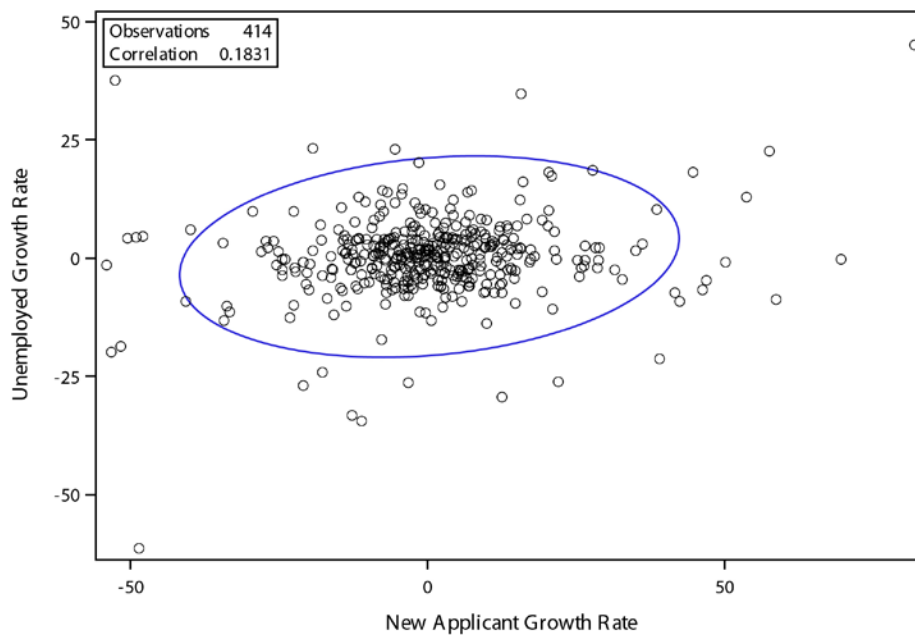


Figure 5.8. Scatter plot between Utah unemployed growth rate and UDES new applicant growth rate with 95% prediction ellipse, 1947 – 1981

³⁰ Source: Utah Department of Workforce Services

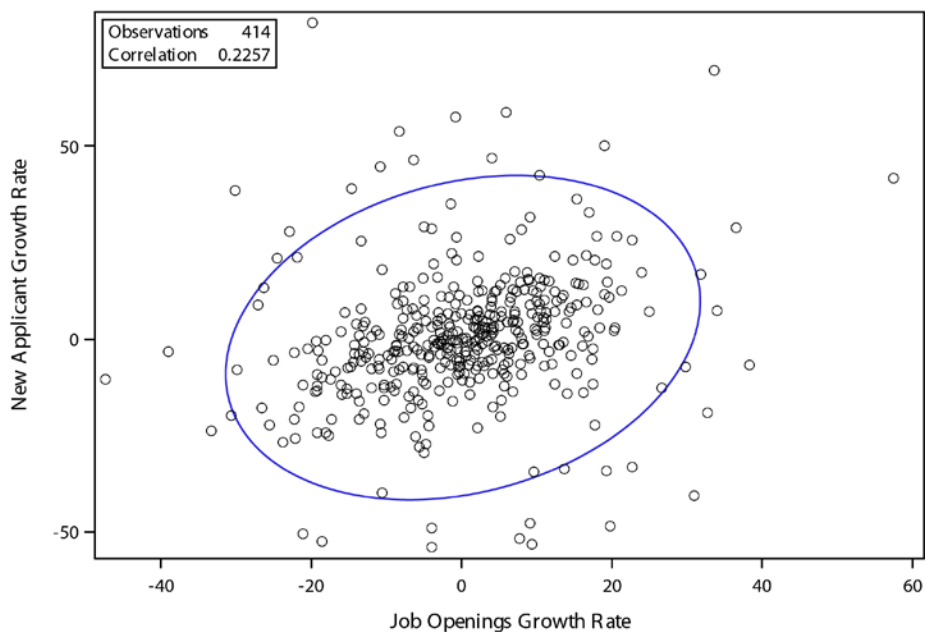


Figure 5.9. Scatter plot between UDES new applicant growth rate and job openings growth rate with 95% prediction ellipse, 1947 – 1981

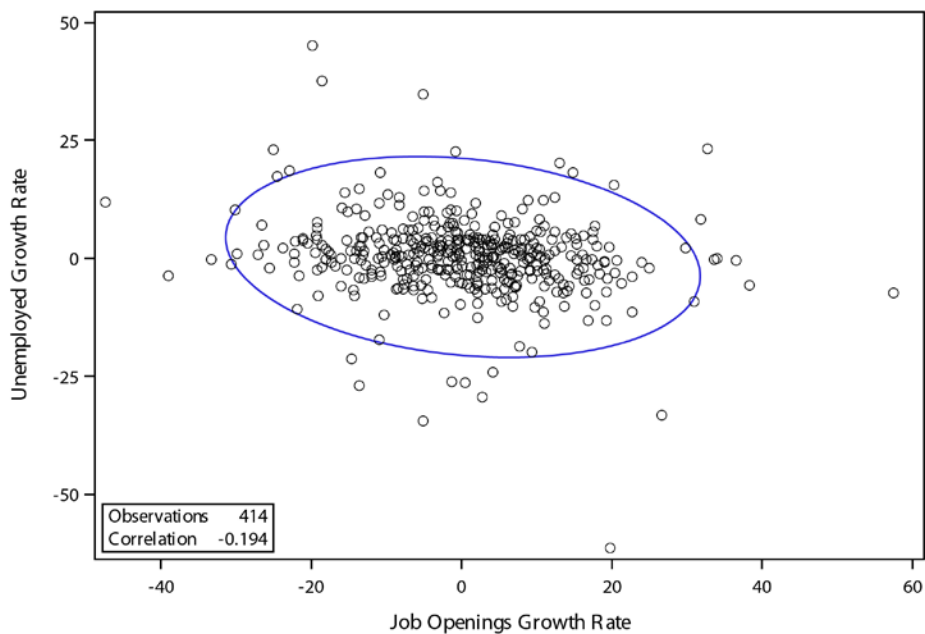


Figure 5.10. Scatter plot between Utah unemployment growth rate and UDES job openings growth rate with 95% prediction ellipse, 1947 – 1981

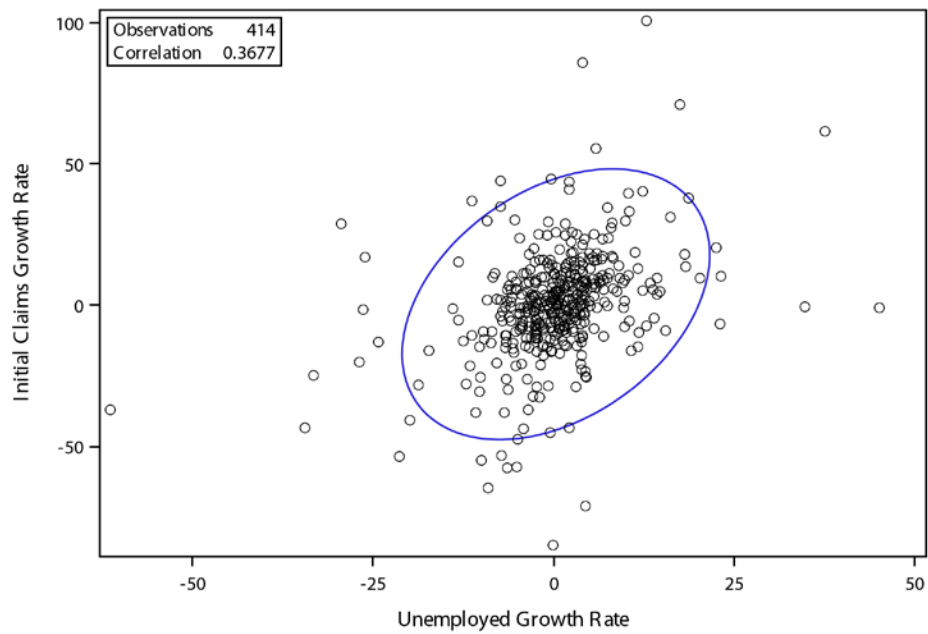


Figure 5.11. Scatter plot between Utah UI initial claims growth rate and unemployment growth rate with 95% prediction ellipse, 1947 – 1981

Table 5.1. Descriptive statistics of seasonally adjusted growth rate variables

	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>
Job Openings	414	0.17893	12.81384	0.52056	-47.40687	57.42341
Unemployed	414	0.33146	8.64261	0.50475	-61.38412	45.10516
Initial Claims	414	0.37270	19.44038	0.53955	-84.92435	100.73828
New Applicants	414	0.31164	17.07865	-0.33306	-54.07247	82.03346

Table 5.2. Pearson Correlation coefficients of growth rates

	Job Openings	Unemployed	Initial Claims	New Applicants
Job Openings	1.00000	-0.19350 (<.0001)	0.05937 (0.2280)	0.22568 (<.0001)
Unemployed	-0.19350 (<.0001)	1.00000	0.36772 (<.0001)	0.18308 (0.0002)
Initial Claims	0.05937 (0.2280)	0.36772 (<.0001)	1.00000	0.36530 (<.0001)
New Applicants	0.22568 (<.0001)	0.18308 (0.0002)	0.36530 (<.0001)	1.00000

Table 5.3. Corrected Akaike Information Criterion results

		Lag of Independent Variables					
		0	1	2	3	4	5
AR	0	10.55625	10.56351	10.57275	10.55243	10.53934	10.55883
	1	10.22848	10.20793	10.21469	10.18396	10.16848	10.16819
	2	10.05613	10.04489	10.05061	10.01218	10.00598	9.992309
	3	10.00520	9.983884	9.995028	9.996762	9.994369	9.982829
	4	9.990868	9.975007	9.987432	9.996016	9.979496	9.968866
	5	9.982976	9.968791	9.982109	9.993503	9.988305	9.973957
	6	9.973061	9.962680	9.975711	9.989179	9.984603	9.974817
	7	9.981144	9.970906	9.983633	9.997547	9.994472	9.982607
	8	9.989254	9.977054	9.990711	10.00555	10.00358	9.989898
	9	9.990726	9.977023	9.990788	10.00543	10.00052	9.980404
	10	9.995583	9.982782	9.996656	10.0114	10.00521	9.989649

Table 5.4. Regression estimates for employer behavior

Variable	Estimate	Standard Error	t Value	Pr > t
Constant	0.82354	0.98309	0.84	0.4027
Initial Claims Growth Rate _t	0.07763	0.03571	2.17	0.0303
Initial Claims Growth Rate _{t-1}	0.03119	0.03622	0.86	0.3897
Unemployed Growth Rate _t	-0.40965	0.07171	-5.71	0.0001
Unemployed Growth Rate _{t-1}	-0.15121	0.07402	-2.04	0.0417
CETA _t	-0.10091	1.48853	-0.07	0.9460
Foundational Period _t	-0.36774	1.24059	-0.30	0.7671
New Applicant Growth Rate _{t-1}	0.06634	0.04183	1.59	0.1136
New Applicant Growth Rate _{t-2}	0.05099	0.04699	1.09	0.2785
New Applicant Growth Rate _{t-3}	0.02045	0.04671	0.44	0.6618
New Applicant Growth Rate _{t-4}	-0.08055	0.04536	-1.78	0.0765
New Applicant Growth Rate _{t-5}	-0.06290	0.04316	-1.46	0.1458
New Applicant Growth Rate _{t-6}	-0.02823	0.03741	-0.75	0.4510
Job Openings Growth Rate _{t-1}	-0.56140	0.05264	-10.67	0.0001
Job Openings Growth Rate _{t-2}	-0.31783	0.05584	-5.69	0.0001
Job Openings Growth Rate _{t-3}	0.01968	0.05657	0.35	0.7281
Job Openings Growth Rate _{t-4}	-0.00744	0.05691	-0.13	0.8961
Job Openings Growth Rate _{t-5}	0.08879	0.05545	1.60	0.1101
Job Openings Growth Rate _{t-6}	0.08779	0.04965	1.77	0.0778

Table 5.5. F-Test results for employer behavior

Variable	DF	F Value	Pr > F
All	F(12,388)	5.05	<.0001
New Applicants	F(6,388)	1.59	0.1478
Unemployment	F(2,388)	20.58	<.0001
Initial Claims	F(2,388)	0.32	0.7290
CETA	F(1,388)	0.00	0.9856
Foundational Period	F(1,388)	0.12	0.7303

Table 5.6. Regression estimates for job seeker behavior

Variable	Estimate	Standard Error	t Value	Pr > t
Constant	1.16328	1.23694	0.94	0.3476
Initial Claims Growth Rate _t	0.21327	0.04493	4.75	0.0001
Initial Claims Growth Rate _{t-1}	0.09540	0.04558	2.09	0.0370
Unemployed Growth Rate _t	0.24664	0.09022	2.73	0.0065
Unemployed Growth Rate _{t-1}	0.07429	0.09313	0.80	0.4255
CETA _t	-0.73688	1.87290	-0.39	0.6942
Foundational Period _t	-0.32767	1.56093	-0.21	0.8338
Job Openings Growth Rate _{t-1}	-0.00356	0.06623	-0.05	0.9571
Job Openings Growth Rate _{t-2}	-0.10680	0.07025	-1.52	0.1293
Job Openings Growth Rate _{t-3}	-0.01827	0.07118	-0.26	0.7976
Job Openings Growth Rate _{t-4}	-0.04073	0.07161	-0.57	0.5698
Job Openings Growth Rate _{t-5}	-0.09988	0.06977	-1.43	0.1531
Job Openings Growth Rate _{t-6}	-0.01126	0.06247	-0.18	0.8571
New Applicant Growth Rate _{t-1}	-0.59493	0.05264	-11.30	0.0001
New Applicant Growth Rate _{t-2}	-0.39571	0.05912	-6.69	0.0001
New Applicant Growth Rate _{t-3}	-0.24561	0.05877	-4.18	0.0001
New Applicant Growth Rate _{t-4}	-0.23431	0.05707	-4.11	0.0001
New Applicant Growth Rate _{t-5}	-0.15280	0.05430	-2.81	0.0051
New Applicant Growth Rate _{t-6}	-0.10414	0.04707	-2.21	0.0275

Table 5.7. F-Test results for job seeker behavior

Variable	DF	F Value	Pr > F
All	F(12,388)	8.93	<.0001
Job Openings	F(6,388)	1.52	0.1692
Unemployment	F(2,388)	8.31	0.0003
Initial Claims	F(2,388)	12.37	<.0001
CETA	F(1,388)	0.30	0.5863
Foundational Period	F(1,388)	0.07	0.7922

CHAPTER 6

THE ANNUAL PERSPECTIVE: 1947 - 2002

6.1 Background

The USES, in partnership with SESA, operates the US public labor exchange platform which seeks to match employers and job seekers. This paper investigates whether or not this platform is two-sided, meaning that the USES and SESA can use strategic subsidies to coordinate the participation of employers and job seekers and maximize transaction volume (Evans, 2003). These subsidies would be effective due to the presence of indirect network externalities: One group participates because of another group. Thus, the subsidies (services) provided to one group would lead to increased participation by the other.

The previous two chapters analyzed monthly UDES administrative data to test this hypothesis. Chapter 4 investigated the behavior of employers and job seekers during the Foundational Period of the modern USES from 1947 to 1963 along with three potential strategic subsidies: UI benefits, job seeker testing and employment counseling. Chapter 5 analyzed a longer period of UDES history from 1947 to 1981 focusing on employer and job seeker behavior as well as the UI subsidy and the role of three policy regimes: The Foundational Period, MDTA and CETA.

The results from both of these chapters suggest the USES does operate as an intermediary on a two-sided platform: When UDES provided job seekers with employment counseling and aptitude testing, this positively influenced the participation of employers. This is because these services exploited the indirect network externalities present in employer behavior: Employers will participate if they believe they can find qualified job seekers on the USES platform.

However, despite three different policy regimes spanning this period of analysis, there appeared to be no impact on employer or job seeker behavior. While this may be due to the fact that many of the policy changes affected agencies other than UDES, it still requires additional investigation.

This chapter analyzes UDES/UDWS annual data from 1947 to 2002 to further test this hypothesis. This longer data set broadens the analysis of policy to include two new regimes: JTPA and the ES Revitalization which bridged the transition from JTPA to WIA. The data set also includes data on the job seeker testing and counseling subsidies, variables that were not present in Chapter 5.

6.1.1 Historical Context

The 1980s brought about a major shift toward increased decentralization of the federal-state partnership, placing more SESA operations under state control. The Job Training Partnership Act of 1982 (JTPA) amended the Wagner-Peyser Act enabling states to customize both job training efforts for the disadvantaged as well as their SES labor exchange programs through federal funding.

JTPA further required partnership between job training efforts with SES operations. This partnership was critical as JTPA undertook both training and placement services, requiring careful coordination from the local ES plan. At times, this partnership led to co-location of JTPA and SES services; however, it also led to competition as JTPA programs sought after the same clients, job leads, employer contacts, and placement credits as the SESA (Ainsworth, 1991).

JTPA legislation also changed the funding for SES operations from the FUTA tax, emphasizing the role of unemployment indicators (Ainsworth, 1991; Balducci, 1997). The core assumption of the new funding formula was that SES activity was closely associated with unemployment. Thus, if employment growth stagnated or declined while unemployment increased relative to that of other states, a state could reasonably expect an increase in SES funding.

The decentralization and restructuring of the SES throughout the 1980s and early 1990s ultimately led to a GAO finding in 1991 that “wide variations in local office performance indicate that active assistance from Labor may help to improve effectiveness of their programs” (Balducci, 1997, p. 470). GAO further recommended “the Secretary of Labor work with the states to identify and solve problems affecting ES program quality and performance” (Balducci, 1997, p. 470).

Policymakers at both the federal and state levels sought to respond to GAO's recommendation to revamp the nation's workforce development system. In 1994, President Clinton proposed the Reemployment Act. The intent of this bill was to facilitate service provider collaboration and competition in a workforce system that was

substantially fragmented.

While the bill never passed, its objectives were adopted by the USDOL. These new objectives focused on improved customer service that integrates technological improvements in service provision, increased labor market information to assist in job search and preparation, and the development of “One-Stop Career Centers” (OSCCs) designed to be delivery hubs of streamlined workforce development services (Balducchi, 1997).

In addition, a renewed emphasis was placed on outcomes of SES customers, including customer satisfaction (Balducchi, 1997). Performance and accountability measures such as these increased in emphasis during this time largely because of the Government Performance and Results Act of 1993 which required greater accountability (OECD, 1999). In 1998, USDOL released a draft of performance measures for comment based on input and trials in SESA offices / one-stop centers across the country.

Many of the objectives designed to integrate services eventually became legislated with the 1998 amendment to the Wagner-Peyser Act entitled the Workforce Investment Act (WIA).³¹ Under WIA, the governor of a state identified a state agency to administer Wagner-Peyser funds and workforce development services according to a 5-year strategic plan (USDOL, 2000).

³¹ P.L. 105-22

6.1.2 National Context

As this chapter investigates Utah data, the degree to which these results can be generalized to the rest of the United States depends to a degree on the similarity of the Utah labor market to that of the US. As can be seen in Figure 6.1, Utah's unemployment rate appears the most similar to that of the US during the Foundational Period and during JTPA, up until the ES Revitalization. While both Utah and the US experienced falling unemployment rates during the ES Revitalization, Utah's unemployment rate was substantially lower, falling to its lowest point during this period. In many ways, this behavior matches that of the CETA period in which the United States unemployment rate was significantly higher than that in Utah, but both were largely declining.

6.1.3 Theoretical Context

Previous chapters have explored the role of subsidies in ensuring participation of both job seekers and employers on the UDES two-sided platform. If indirect network externalities exist, these subsidies are critical for maximizing transaction volume. Chapter 4 investigated the role of aptitude testing and employment counseling while both Chapters 4 and 5 examined the role of the UI subsidy.

This chapter will facilitate additional analysis into each of these three subsidies, all of which have ties to the intermediation literature. If indirect network externalities exist in the behavior of employers in response to UI initial claims, UI benefits will represent a subsidy that functions as a mechanism to maintain a pool of labor until the employers have jobs available. This is similar to subsidization in Katz and Shapiro

(1985, 1994), Rochet and Tirole (2002a, 2002b), Hagiu (2004), Nocke, Peitz, and Stahl (2004) and Reisinger (2004).

In addition, by providing a subsidy such as employment counseling, the UDES functions as an intermediary serving as a broker. Spulber (1996a) and Myerson and Satterthwaite (1983) describe this role. When a buyer and seller cannot agree on a price, a broker intermediary may subsidize or tax the transaction in order to bring the buyer and seller to agreement.

When job seekers receive employment counseling from the SESA, it is because the individual typically has one or more barriers to employment. This barrier often takes the form of a gap that can be mediated by training. In these instances, the SES refers the job seeker to training, which is usually funded or subsidized with public funds. After training, the job seeker brings a different skill set to the transaction. With an augmentation of skills, the job seeker can command a higher wage and becomes one more candidate that can meet the need of an employer with a vacancy. Furthermore, because training typically includes a validation of skills, this also reduces the moral hazards of employers who run the risk of receiving a poorly qualified candidate from the SES.

Spulber (1996a) and Li (1998) discuss how an intermediary can reduce the moral hazards of agents by providing quality validation services. Thus, when the SES provides the third subsidy, aptitude testing of job seekers, the SES performs quality validation services, improving the welfare of employers and reducing the asymmetric they face when using the USES platform.

6.1.4 Testing the Hypothesis

This chapter will analyze annual UDES administrative data from 1947 to 2002 to further test the hypothesis that the USES in partnership with SESA operates as a two-sided platform and can use strategic subsidies to coordinate employer and job seeker behavior. While the data set used is longer than that of the previous chapter, its annual format will constrain the extent of the investigation. Thus, the analysis in this chapter will explore (1) how employment demand affects employer participation, (2) the impact of job seeker participation on employer participation, (3) the impact of UI benefits, job seeker testing and employment counseling on the participation of employers, (3) how employment demand affects job seeker participation, (4) whether job seeker behavior is influenced by the number of job openings posted, (5) the impact of UI benefits, job seeker testing, and employment counseling on job seeker participation, and (6) the impact policy regime changes had on employer and job seeker participation.

6.2 Data

6.2.1 Data Sources

Data for this chapter were compiled by the author for UDES and UDWS annual reports from 1947 to 2002. Changing administrative year definitions throughout this period led to challenges with data set assembly. Calendar years were used in reporting from 1947 to 1971. The next section of time utilized the federal fiscal year as the reporting basis which runs from October through September. Federal year reporting was used from October 1972 through September 1983. The remaining years of this series

followed the Program Year designation which runs from July through June. Thus, the third segment of the data runs from July 1983 through June 2001, leading to a 3-month overlap of the data.

Due to programmatic changes with the USES reporting system, this data set cannot be extended past June 2002. Changes in performance measures led to no comparable measure of job seeker behavior with new applicant counts. In addition, this transition to a new reporting system, led to a relaunch of the USES administrative data with zero counts of measures on July 1, 2002. Thus, no “carry-in” data were allowed (USDOL, 2002).

6.2.1.1 Unemployment

As with previous chapters, unemployment levels are used to reflect fluctuating employment demand. Thus employers will post more jobs when unemployment is low and job seekers will pursue the UI subsidy to participate with ES when unemployment is higher.

To provide economic context for this chapter’s analysis, unemployment levels were divided by the labor force for 1947 through 2002. This series is presented in Figure 6.2.

The annual nature of this series reveals a long, upward trend in the unemployment rate from the end of the Korean War Conflict through 1983, with the exception of a significant downturn in the later portion of the 1970s. However, this trend reversed coinciding with the onset of JTPA, with a downward trend from that point to the end of

the series.

6.2.1.2 UI Initial Claims

Counts of UI initial claims represent the act of job seekers selecting the UI subsidy. Typically, workers file for UI when they cannot find a job; however, receiving UI benefits requires claimants to register for work at the public labor exchange unless they can expect to return to their employer after a particular season. Consequently, the filing of UI initial claims frequently leads to increases in ES job seeker registrations.

6.2.1.3 New Applicants

As with previous chapters, job seeker behavior will be represented by counts of new applicants—those job seekers who registered for SES job services. Specifically, a new application is the initiation of a 12-month window for which a job seeker can use and later reuse SESA services.

If indirect network externalities exist in job seeker behavior, individuals will register with the SES because they are required to do so as a contingency for receiving the UI subsidy or they will register to pursue the job openings posted with the SESA.

Figure 6.3 displays the counts of UI initial claims alongside counts of new applicants. As discussed in the previous chapter, a shift in the linkage between UI initial claims and new applicants appears to occur in the late 1960s and lasts until the early 1970s. However, a new decoupling appears with the onset of the JTPA legislation where UI initial claims drop substantially while counts of new applicants continue to climb,

reflecting a substantially different influence than simply the UI work requirement. This trend appears to continue until the onset of WIA, which begins in 1998.

6.2.1.4 Job Openings

Employer participation on the UDES platform is measured by counts of posted job openings. When employers have vacancies, they voluntarily notify UDES which in turn makes an effort to notify job seekers registered with the UDES. UDES also works to recruit workers for these jobs from the registered job seeker pool.

As a measure of employer participation, the presence of indirect network externalities would lead to new applicants increasing as jobs become available. Conversely, when jobs are few, individuals would register with the ES as a requirement for receiving the UI subsidy.

Figure 6.4 displays the relationship between job openings, new applicants and UI initial claims throughout this period. What becomes evident is that during the policy regimes of CETA and JTPA, new applicant counts appear to follow job openings quite frequently. The exception is during the period around 1983 when unemployment was at its height.

6.2.1.5 Individuals Tested

UDES tested the skill sets of job seekers to determine what skills they possessed and to ensure they met the qualifications required by employers. Thus, testing functioned as a subsidy to job seekers that could also positively influence employer participation

with the SESA.

Figure 6.5 displays counts of testing and job openings throughout this period. What is critical to note is how substantially employer participation increased during the CETA years while testing remained relatively flat. This suggests another influence or subsidy was at work encouraging employer participation. The hypothesis of this chapter suggests that employment counseling, which frequently leads to job training, became another subsidy which provided employers with the pool of qualified candidates they desired. This hypothesis is supported by Figure 6.5.

6.2.1.6 Counseling Interviews

When job seekers have barriers to employment, the SES provides employment counseling to address these barriers. Employment counseling often reveals the job seeker lacks the skills needed to find employment. Consequently, employment counseling leads to subsidized job seeker training.

Figure 6.6 reflects the relative size of testing and employment counseling throughout this period. For the most part, job seeker testing efforts exceed employment counseling, with the exception of the CETA years. This suggests the upswing in employer participation during the CETA policy regime may have been the result of employment counseling (training) activities.

Figure 6.7 explores this relationship further plotting job opening counts alongside counts of individuals tested and counseling interviews. While the magnitude difference between the series presents some interpretation challenges, it is not unreasonable to

suspect that employment counseling can also act as a subsidy to job seekers that also encourages employer participation.

6.2.2 Transformations

Given the annual nature of the data, no seasonal adjustments were made. However, given the shorter availability of the individuals tested series, the remaining series were truncated to coincide accordingly. Finally, as with previous chapters, each data series was converted to a natural log growth rate according to the formula found in Equation 6.1 below.

$$\hat{w}_t = \ln(x_t) - \ln(x_{t-1}) \quad (6.1)$$

6.2.3 Univariate and Bivariate Analysis

To provide additional understanding of the data series, descriptive statistics of the natural log growth rates of each series have been provided. As can be seen in Table 6.1, counseling interviews, new applicants, and unemployed growth rates each appear evenly distributed around the mean with job openings and initial claims exhibiting negative skewness and individuals tested skewing positively.

To further understand the relationships between the data series, Pearson Correlations were run for each pair of data series. The results are presented in Table 6.2. To further illustrate these correlations, scatter plots are provided. Each of these scatter plots also features a 95% prediction ellipse according to Equation 6.2 below, where

$\alpha = 0.05$.

$$\pi = \frac{2(n+1)}{n-2} F_{2,n-2}(1-\alpha) \quad (6.2)$$

A few results are different from those in previous chapters and are worth nothing. The first set of correlations worthy of mention is the relationship between job openings and unemployment as well as job openings and UI initial claims. Both pairs indicate a strong, procyclical nature of job openings. This is a stronger negative relationship than witnessed in past chapters. These negative correlations are further illustrated with scatter plots in Figure 6.8 and Figure 6.9.

Another key set of correlations to note are between new applicants and initial claims and new applicants and job openings. New applicants and initial claims exhibit the strongest correlation compared to previous chapters. This suggests the strong influence the UI subsidy has on new applicants. However, the statistical significance between the correlation of new applicants and job openings is far weaker than in previous chapters. These correlations are visualized in scatter plots in Figure 6.10 and Figure 6.11. What is immediately evident in the scatter plot is the weakness of the relationship between job openings and new applicants. This weakness will be explored later in this chapter.

The final correlation worth identifying is the negative, statistically significant relationship between new applicants and counseling interviews. This may reflect the fact

that individuals who receive subsidized training frequently drop out of the employment registration process until their training is complete. Nevertheless, this relationship will be explored later in this chapter.

6.3 Model Results

Unlike previous chapters which examined monthly data, employer and job seeker UDES participation will be analyzed in this chapter with a VARX(0,0) model across t years according to Equation 6.3 below:

$$\begin{pmatrix} j_t \\ n_t \end{pmatrix} = \alpha i_t + \epsilon_t \quad (6.3)$$

where j_t denotes job openings, n_t represents new applicants, i_t represents UI initial claims while ϵ_t represents a white noise process.³²

Several parameters were considered in the selection of this model. Autoregressive orders of $p=0, \dots, 10$ and lags of $s=0, \dots, 5$ were examined. The parameters of $p=0$ and $s=0$ exhibited the lowest AICc of 10.51629 as can be seen in Table 6.3.

In previous chapters, the current term ($t=0$) was included for the independent variables due to the nature of employer and job seeker logistics when using the SES. Many of the activities took place within the same month such as when a job seeker files a

³² Following Belsley, Kuh, and Welsch (1980), tests were performed for the presence of multicollinearity across independent variables in addition to Variance Inflation Factor analysis. No indication of multicollinearity was present across the independent variables.

UI claim, he or she needs to immediately register for the labor exchange if he or she was not returning to the employer at a later date. With annual data, more activities are likely to take place during the year of a job opening being posted or a new application being filed. Thus, the current term is included in the regression model for this chapter as well.

6.3.1 Employer Behavior: Job Openings Posted

The results of the employer regression analysis can be viewed in Table 6.4. In keeping with consistency of previous chapters, *F*-Test results for all the variables are displayed in Table 6.5 although these results largely match *t*-statistics in Table 6.4. Also, in past chapters, the process of employer behavior fluctuates over a period of 3 months. Thus, it is not surprising that the autoregressive term is not necessary for this annual model.

As can be seen in the regression results and *F*-Tests, unemployment does not appear to exert a statistically significant impact on employer behavior, unlike previous chapters. However, it appears initial claims can be considered a proxy for unemployment in this situation because of the high correlation of unemployment and initial claims (0.67092).³³ This result is also likely due to the fact that the negative correlation between initial claims and job openings (-0.47358) is stronger than that between unemployment and job openings (-0.42330). Nevertheless, it is evident that employers continue to post more jobs when unemployment is lower.

³³ See Table 6.2 for all Pearson Correlation coefficients

There also appears to be no evidence of indirect network externalities in employer behavior. The impact of UI initial claims does not provide evidence due to the fact that the coefficient is negative. Previous chapters speculated that annual data would be better situated to analyze the effect of UI initial claims on employers. However, there is no evidence initial claims positively influenced employer behavior.

There is also no evidence that employers participated simply because job seekers participated. This is largely due to the fact that the model that minimized the AICc excluded lagged effects of job seeker participation on employers and vice versa. Thus, as in previous chapters, employers do not post jobs with UDES simply because job seekers are available.

However, in Chapter 4, the analysis of monthly data determined that employers will post jobs with the UDES if they believe qualified job seekers exist on the UDES platform. This was evidenced by the significance of employment counseling and to a degree, job seeker testing. Yet, as can be seen in Table 6.4 and Table 6.5, there appears to be no indication of indirect network externalities in the behavior of employers when looking at the impact of job seeker testing and employment counseling in the annual data.

There are two primary possibilities for this result. The first possibility is that there may not be any indirect network externalities present in the behavior of employers over the broader history of the UDES. Under this scenario, employer behavior is strictly driven by employment demand, posting more jobs when unemployment is lower.

The second possibility is that the employer indirect network externalities cannot be observed on an annual basis. When looking at the Foundational Period, it was the

prior month of job seeker testing that demonstrated predictive impact on employer behavior. If this process is short-term, spanning only a few months, then it may not be something that can be captured with this data set. However, this can be explored further in the next chapter. While it also utilizes annual data, it also features 46 different states, providing a deeper level of insight.

This data set also afforded the opportunity to investigate the role of policy on the behavior of employers and job seekers. To that end, policy dummies were added to compare the impact of the Foundational Period, MDTA, CETA and JTPA to the ES Revitalization regime. However, as was the case in the previous chapter, the policy regime appeared to have no impact on the participation of employers.

6.3.2 Job Seeker Behavior: New Applications

The regression estimates for job seeker behavior are displayed in Table 6.6 with the results of the *F*-Tests displayed in Table 6.7. In previous chapters that analyzed monthly data, job seeker behavior appeared to follow a 6-month process. Consequently, it is not surprising that with the annual data of this chapter, no new applicant autoregressive terms are significant for the model.

In a manner consistent with previous chapters, job seekers appear to participate when unemployment is higher, influenced primarily by the filing of initial claims. Also similar to previous chapters, the regression and *F*-Tests in Table 6.6 and Table 6.7 indicate no indirect network externalities appear to be present in job seeker behavior. In this case, the model that minimizes the AICc does not even include employer behavior as

an independent variable for new applicants.

It is also worth noting that when looking at job seeker behavior, there is some indication that counseling has an impact in the regression and *F*-Tests results at the 10% significance level. However, the impact is negative. Thus, counseling has a negative relationship with new applicants. While one could argue that this negative relationship is because counseling is procyclical and new applicant counts tend to increase during counter-cyclical employment swings, counseling in fact has almost no correlation with unemployment (-0.08644).

The likely reason for this curious relationship is the way in which counseling activities have been influenced during various policy regimes. During MDTA, counseling received increasing attention only to decline sharply through the CETA and JTPA periods. Finally, employment counseling began receiving new emphasis during the ES Revitalization. Thus, because of different shifts in its emphasis, counseling developed a seemingly negative relationship with new applicants.

Despite the impact of policy regimes emphasizing employment counseling and other activities differently, different policy regimes continue to exhibit no overall impact on employer or job seeker behavior. To test this relationship, dummy variables for the Foundational Period, Manpower, CETA and JTPA were included to measure the potential impact relative to the ES Revitalization—the policy regime in force for the analysis in Chapter 7. Yet, similar to the policy analysis in the previous chapter, no impact can be perceived on the participation of employers or job seekers.

6.4 Conclusion

This chapter analyzed the entirety of the period in question (1947 – 2002) using annual administrative data from the UDES. This extended data series enabled the analysis of ES policy shifts that began with JTPA and the ES Revitalization and the impact UI, testing and employment counseling had on employer and job seeker behavior.

In terms of UDES activity, the policy changes appeared to have no effect on employer and job seeker behavior and neither did the testing and employment counseling subsidies. Employers continued to post more jobs when unemployment was lower and job seekers continued to participate when unemployment was higher. However, UI initial claims did significantly influence the participation of job seekers, similar to previous chapters.

The next chapter seeks to determine whether these results can be generalized to all states or whether these are merely specific to the Utah experience. To that end, a panel data set comprised of 45 states plus the District of Columbia will be investigated during a dynamic period in USES history: the ES Revitalization of 1992 – 2002 which bridges the transition from JTPA to WIA. In addition, because of the detailed nature of this data set, critical research questions posed in this chapter and previous chapters will be addressed.

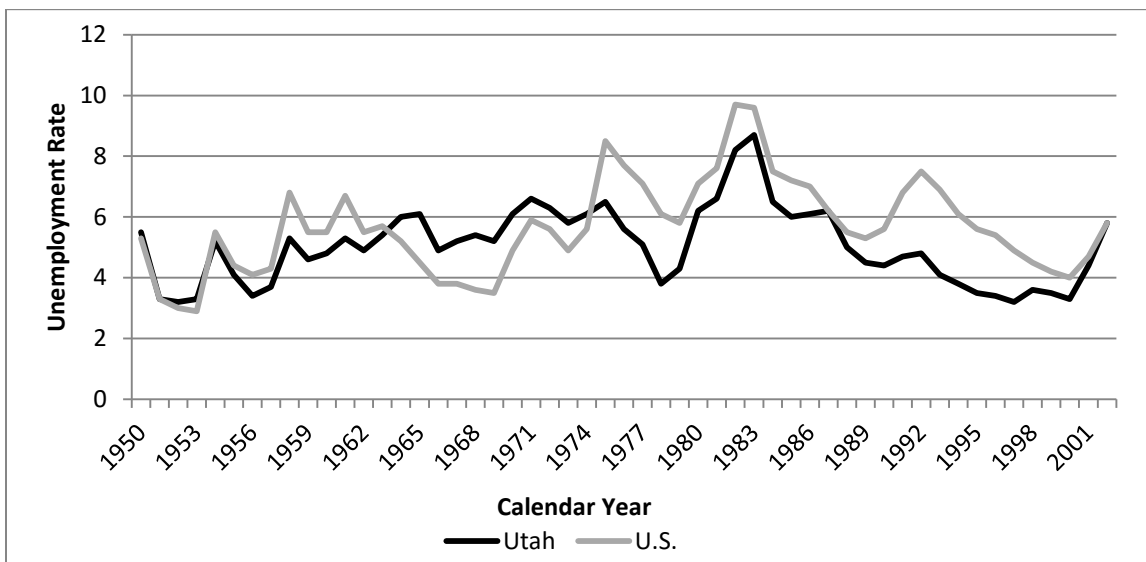


Figure 6.1. Utah vs. United States,³⁴ annual average unemployment rate, 1950 – 2002³⁵

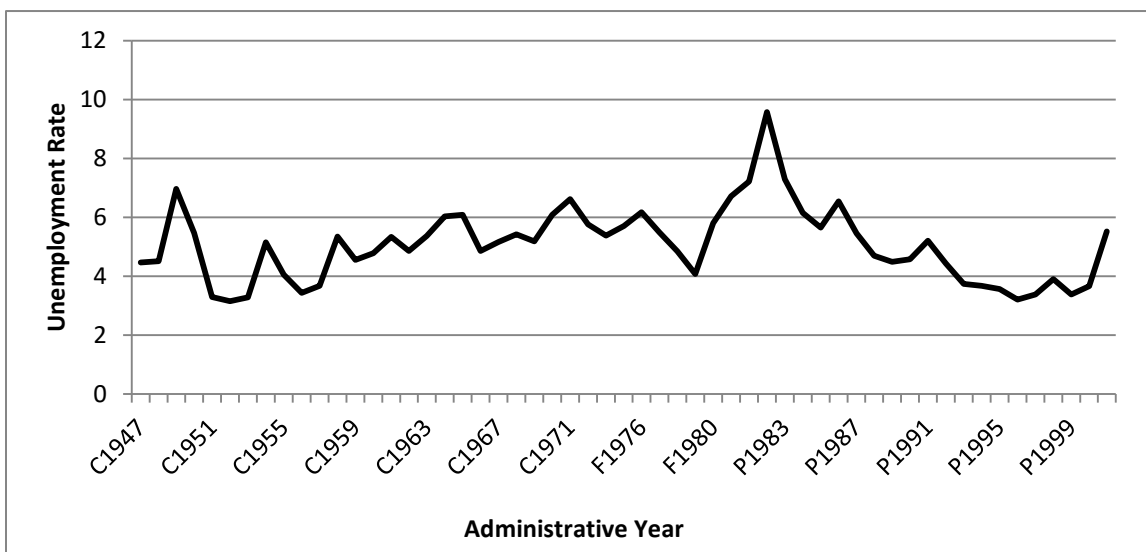


Figure 6.2. Annual Utah unemployment rate 1947 - 2002³⁶

³⁴ Source: Utah Department of Workforce Services and Bureau of Labor Statistics

³⁵ Comparable data are not available prior to 1950.

³⁶ Source: Utah Department of Workforce Services

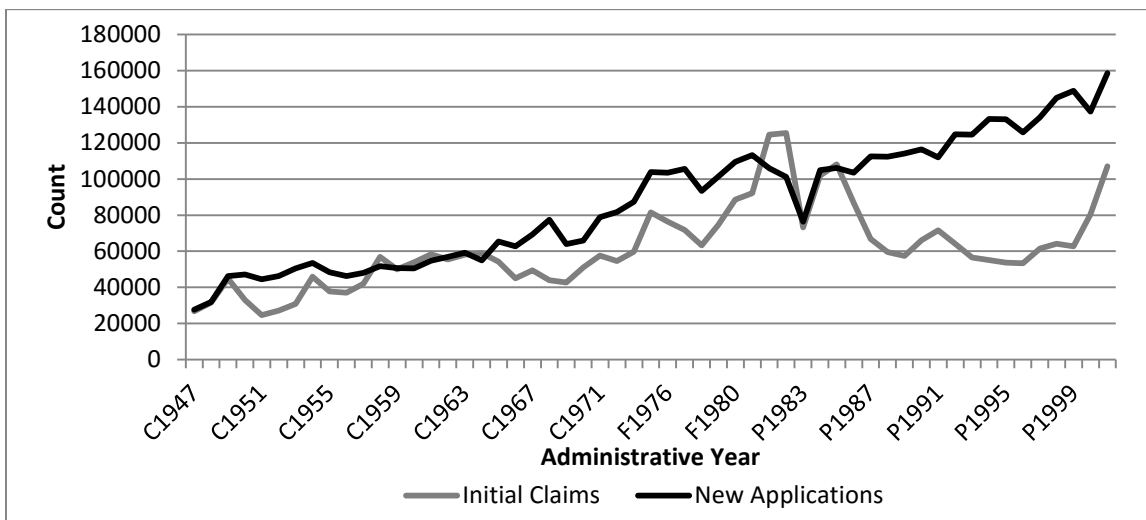


Figure 6.3. Annual counts of Utah UI initial claims and UDES new applicants, 1947 - 2002³⁷

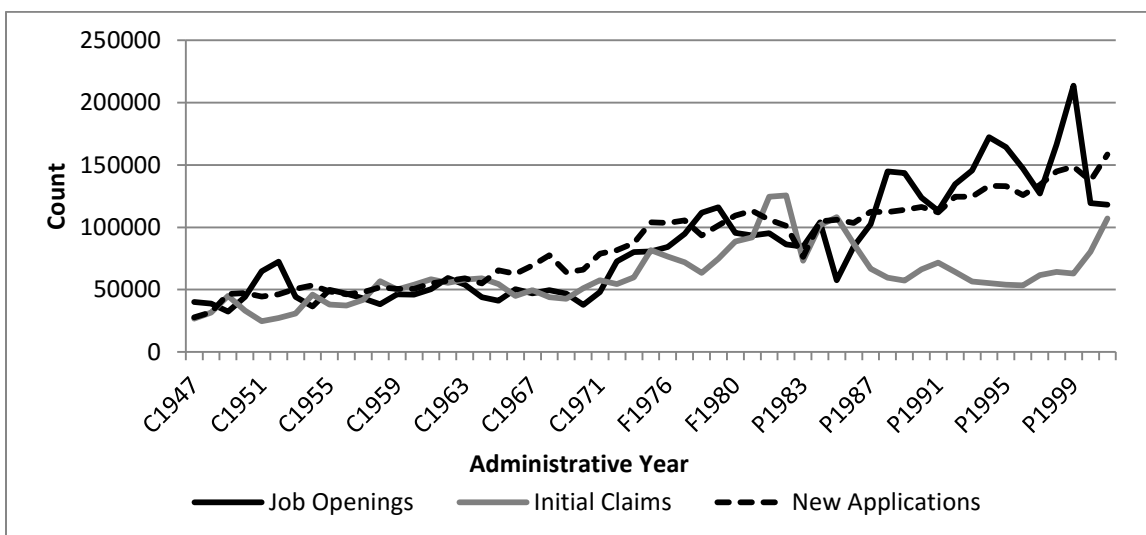


Figure 6.4. Annual counts of Utah UI initial claims, UDES job openings and new applications, 1947 - 2002³⁸

³⁷ Source: Utah Department of Workforce Services

³⁸ Source: Utah Department of Workforce Services

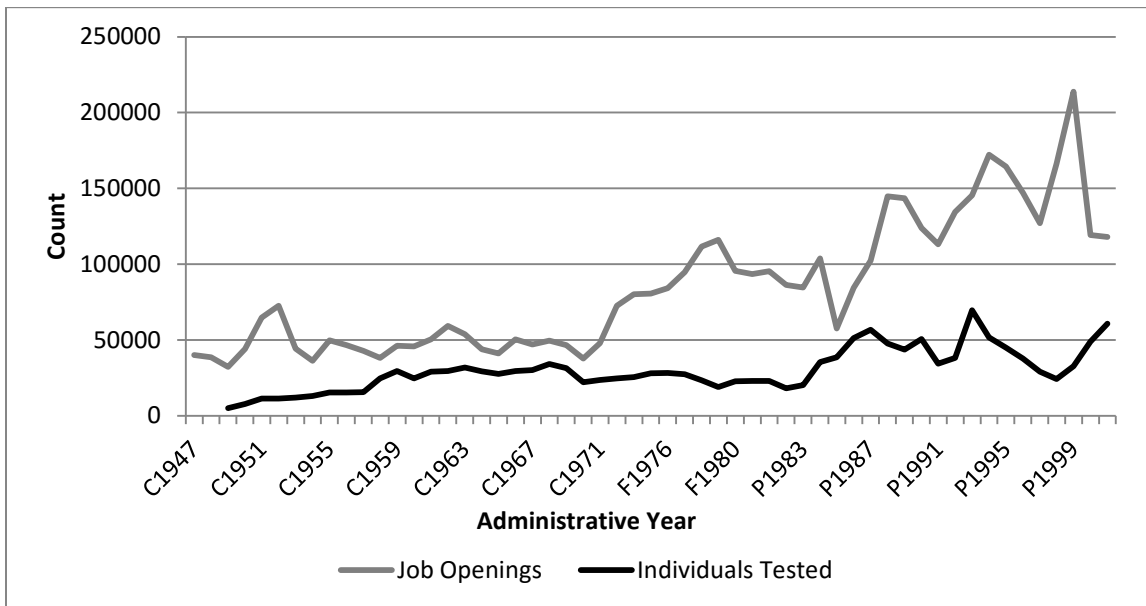


Figure 6.5. Annual counts of UDES job openings and individuals tested, 1947 – 2002³⁹

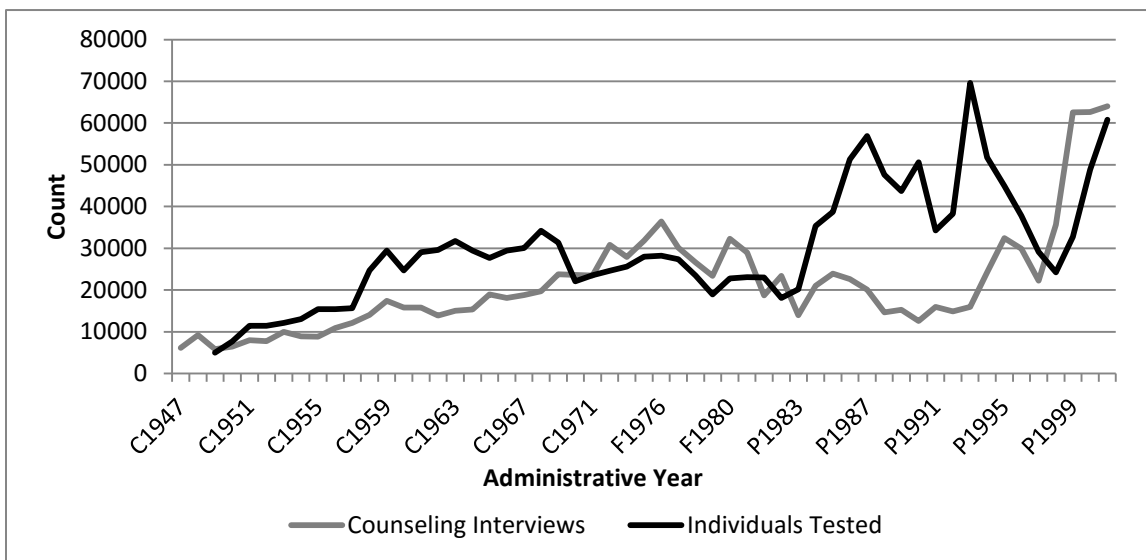


Figure 6.6. Annual counts of UDES counseling and individuals tested, 1947 - 2002⁴⁰

³⁹ Source: Utah Department of Workforce Services

⁴⁰ Source: Utah Department of Workforce Services

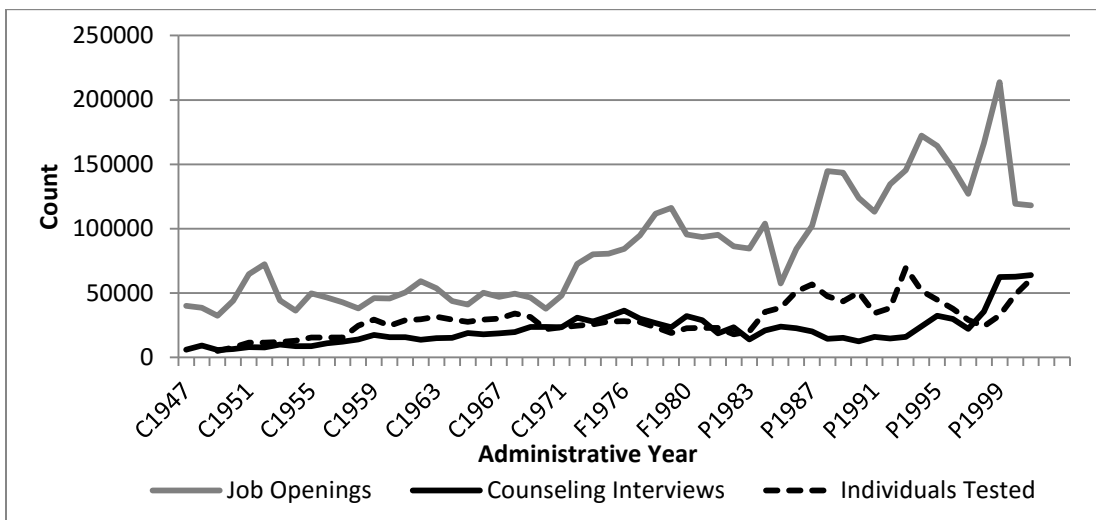


Figure 6.7. Annual counts of UDES job openings, counseling interviews and individuals tested, 1947 - 2002⁴¹

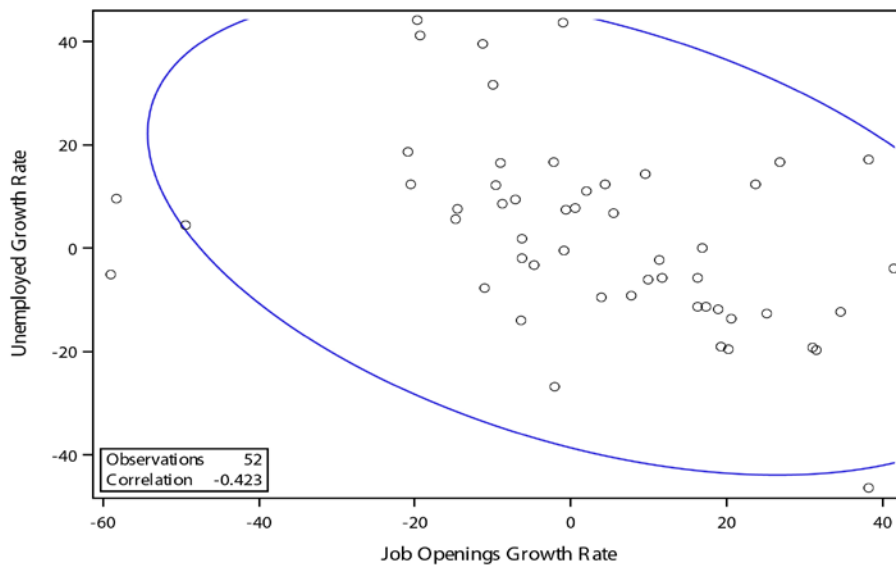


Figure 6.8. Scatter plot between UDES unemployed growth rate and job openings growth rate with 95% prediction ellipse

⁴¹ Source: Utah Department of Workforce Services

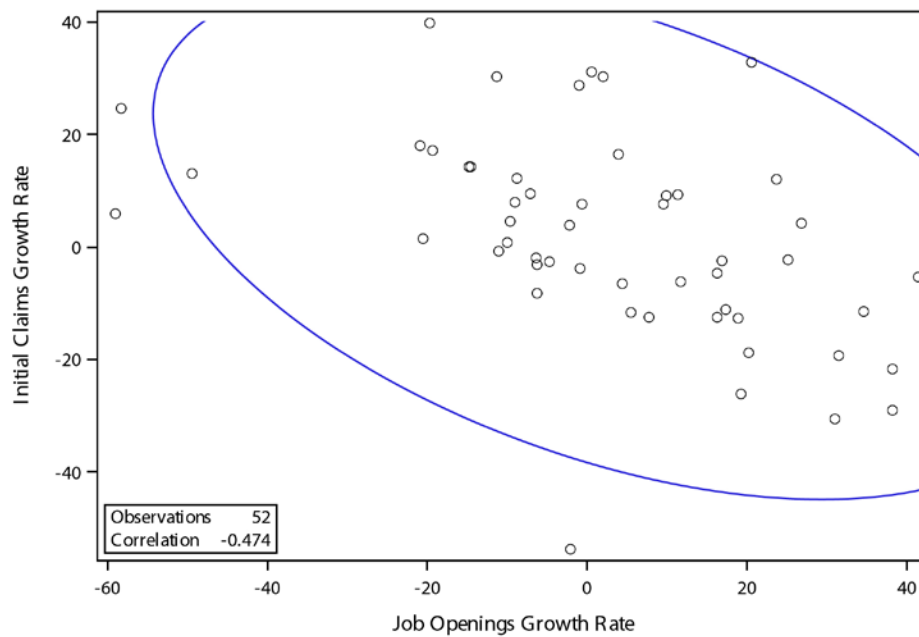


Figure 6.9. Scatter plot between UI initial claims growth rate and UDES job openings growth rate with 95% prediction ellipse

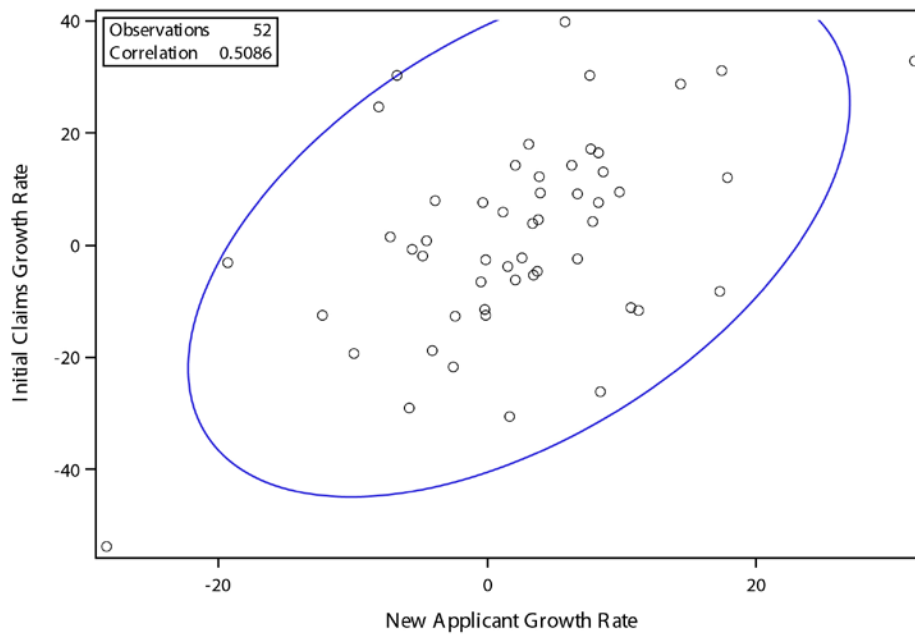


Figure 6.10. Scatter plot between Utah UI initial claims and UDES new applicant growth rate with 95% prediction ellipse

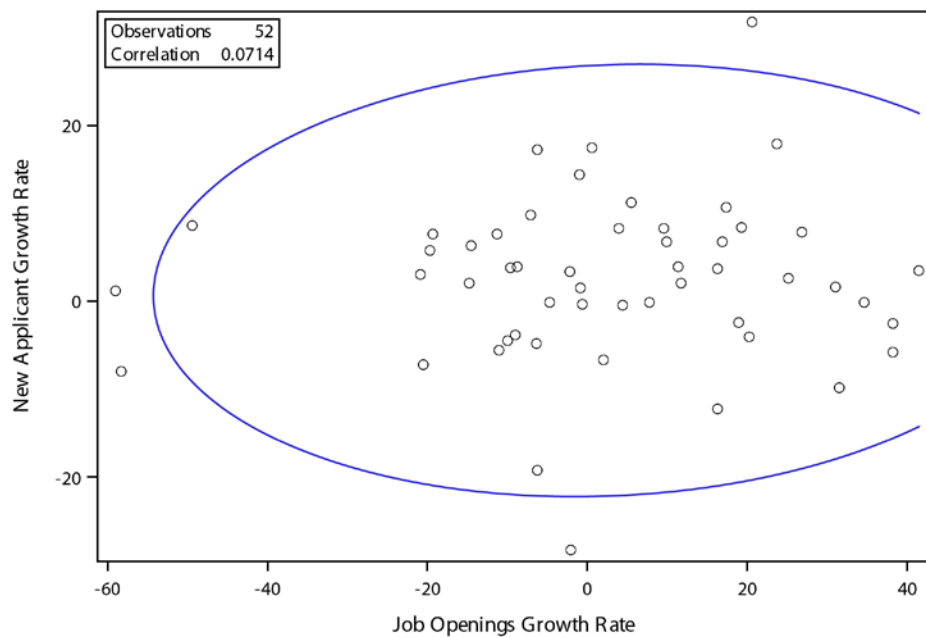


Figure 6.11. Scatter plot between UDES new applicant growth rate and job openings growth rate with 95% prediction ellipse

Table 6.1. Descriptive statistics of annual growth rate variables

	<i>N</i>	Mean	<i>SD</i>	Median	Minimum	Maximum
Job Openings	52	2.48931	22.06962	1.24568	-59.01164	41.46540
Unemployed	52	2.52470	18.04556	0.93177	-46.43056	44.18328
Initial Claims	52	1.67149	18.11299	1.11974	-53.81384	39.81723
New Applicants	52	2.36447	9.54926	2.85472	-28.28113	31.74751
Individuals Tested	52	4.82305	21.93788	4.09688	-38.95353	59.86003
Counseling Interviews	52	-4.59781	21.56829	-3.05470	-56.33661	51.20968

Table 6.2. Pearson Correlation coefficients of annual growth rates

	Job Openings	Unemployed	Initial Claims	New Applicants	Individuals Tested	Counseling Interviews
Job Openings	1.00000	-0.42330 (0.0018)	-0.47358 (0.0004)	0.07135 (0.6152)	0.13995 (0.3224)	-0.03661 (0.7967)
Unemployed	-0.42330 (0.0018)	1.00000	0.67092 (<.0001)	0.27850 (0.0456)	-0.14317 (0.3113)	-0.08644 (0.5423)
Initial Claims	-0.47358 (0.0004)	0.67092 (<.0001)	1.00000	0.50858 (0.0001)	-0.05146 (0.7171)	-0.12027 (0.3957)
New Applicants	0.07135 (0.6152)	0.27850 (0.0456)	0.50858 (0.0001)	1.00000	0.17087 (0.2258)	-0.31900 (0.0212)
Individuals Tested	0.13995 (0.3224)	-0.14317 (0.3113)	-0.05146 (0.7171)	0.17087 (0.2258)	1.00000	-0.13578 (0.3372)
Counseling Interviews	-0.03661 (0.7967)	-0.08644 (0.5423)	-0.12027 (0.3957)	-0.31900 (0.0212)	-0.13578 (0.3372)	1.00000

Table 6.3. Corrected Akaike Information Criterion Results⁴²

		Lag of Independent Variables					
		0	1	2	3	4	5
AR	0	10.51629	10.78607	11.21167	11.8177	12.54781	14.31238
	1	10.63779	10.88654	11.37452	11.90135	13.06383	15.27798
	2	10.77222	11.11757	11.68258	12.24007	13.84415	16.73996
	3	10.84232	10.95429	11.62141	12.50637	14.18724	17.68219
	4	11.13864	11.33022	12.21714	13.60216	16.0669	21.63187
	5	11.65665	12.00706	13.15784	15.02353	18.67623	25.99855
	6	12.21819	12.86735	14.39956	17.02914	23.05185	38.17072
	7	12.79170	13.82679	16.05870	19.4511	30.90611	88.97001
	8	13.77635	15.50515	19.13130	26.45276	57.85997	*
	9	15.21356	17.90787	24.45503	43.81347	*	*
	10	17.09162	21.77681	36.20469	*	*	*

Table 6.4. Regression estimates for employer behavior

Variable	Estimate	Standard Error	t Value	Pr > t
Constant	1.15841	6.78286	0.17	0.8652
Initial Claims Growth Rate _t	-0.46979	0.21792	-2.16	0.0367
Counseling Growth Rate _t	-0.09748	0.14166	-0.69	0.4951
Testing Growth Rate _t	0.09845	0.13856	0.71	0.4812
Unemployed Growth Rate _t	-0.22665	0.21823	-1.04	0.3048
CETA _t	7.04393	9.52910	0.74	0.4638
Foundational Period _t	2.26915	8.74443	0.26	0.7965
JTPA _t	-2.32577	9.82895	-0.24	0.8141
Manpower _t	1.27927	9.27803	0.14	0.8910

⁴² “*” indicates the model could not be processed for the parameters selected due to a lack of observations.

Table 6.5. *F*-Test results for employer behavior

Variable	DF	<i>F</i> Value	Pr > <i>F</i>
All	F(8, 43)	2.07	0.0604
Unemployment	F(1,43)	1.08	0.3048
Initial Claims	F(1,43)	4.65	0.0367
Testing	F(1,43)	0.50	0.4812
Counseling	F(1,43)	0.47	0.4951
CETA	F(1,43)	0.55	0.4638
Foundational Period	F(1,43)	0.07	0.7965
JTPA	F(1,43)	0.06	0.8141
Manpower	F(1,43)	0.02	0.8910

Table 6.6. Regression estimates for job seeker behavior

Variable	Estimate	Standard Error	<i>t</i> Value	Pr > <i>t</i>
Constant	0.46397	2.71994	0.17	0.8654
Initial Claims Growth Rate _{<i>t</i>}	0.30593	0.08739	3.50	0.0011
Counseling Growth Rate _{<i>t</i>}	-0.10894	0.05681	-1.92	0.0618
Testing Growth Rate _{<i>t</i>}	0.07810	0.05556	1.41	0.1670
Unemployed Growth Rate _{<i>t</i>}	-0.05490	0.08751	-0.63	0.5337
CETA _{<i>t</i>}	0.16805	3.82120	0.04	0.9651
Foundational Period _{<i>t</i>}	-1.18385	3.50654	-0.34	0.7373
JTPA _{<i>t</i>}	2.23771	3.94144	0.57	0.5732
Manpower _{<i>t</i>}	2.73788	3.72051	0.74	0.4658

Table 6.7. *F*-Test results for job seeker behavior

Variable	DF	<i>F</i> Value	Pr > <i>F</i>
All	F(8, 43)	3.29	0.0051
Unemployment	F(1,43)	0.39	0.5337
Initial Claims	F(1,43)	12.26	0.0011
Testing	F(1,43)	1.98	0.1670
Counseling	F(1,43)	3.68	0.0618
CETA	F(1,43)	0.00	0.9651
Foundational Period	F(1,43)	0.11	0.7373
JTPA	F(1,43)	0.32	0.5732
Manpower	F(1,43)	0.54	0.4658

CHAPTER 7

ES REVITALIZATION ACROSS THE COUNTRY: 1992 - 2002

7.1 Background

In partnership with the SESA, the USES operates the US public labor exchange platform, seeking to match employers with job seekers. This paper investigates whether or not this platform is two-sided and implies that the USES could implement strategic subsidies to coordinate the simultaneous participation of employers and job seekers. This is because the presence of indirect network externalities: One group participates because the other group participates. By subsidizing one side of the market, both sides will participate. This leads to maximized transaction volume and a great impact on the US labor market.

Previous chapters analyzed monthly and annual UDES administrative data to test this hypothesis. Chapter 4 investigated monthly data to analyze the behavior of employers and job seekers during the Foundational Period of the modern USES from 1947 to 1963 along with three potential strategic subsidies: UI benefits, job seeker testing and employment counseling. Chapter 5 also analyzed monthly data comprising a longer period of UDES history from 1947 to 1981 focusing on employer and job seeker behavior as well as the UI subsidy and the role of three policy regimes: The Foundational Period,

MDTA and CETA. Chapter 6 analyzed annual UDES from 1947 to 2002 to further investigate the role of policy on employer and job seeker behavior as well as the impact of the UI, job seeker testing and employment counseling subsidies.

The findings from these chapters reflect mixed results as to whether the USES operates as an intermediary on a two-sided platform. Chapter 4, which focused on the Foundational Period of the modern USES, revealed the presence of indirect network externalities in employer behavior: employers are more likely to participate if they believe qualified job seekers are available on the USES platform. Consequently, when UDES provided employment counseling and aptitude testing services to job seekers, it positively influenced employer participation.

Yet, this result was not as evident in Chapter 5. Employer participation was driven solely by employment demand and job seeker participation was driven solely by the desire to receive UI benefits. However, the data set used in Chapter 5 did not include job seeker testing and employment counseling which may explain why no indirect network externalities could be detected. Nevertheless, the analysis of Chapter 6 also failed to confirm the hypothesis and the data set did include employment counseling and aptitude testing. Thus, the results were consistent with Chapter 5.

Chapters 5 and 6 also looked at the role of policy as it relates to employer and job seeker behavior. Neither chapter revealed a significant impact from a particular policy regime. However, this may be due to the fact that much of the policy changes affected agencies other than USES from the beginning of MDTA up until the ES Revitalization beginning in 1992.

Consequently, this chapter plays a critical role in the investigation of the hypothesis and the discussion surrounding the effectiveness of USES policy as it investigates a data set that is quite different from that of the previous chapters. Instead of Utah data that are limited over a period of time, this chapter utilizes a panel data set comprised of 46 SESA from 1992 to 2002 and gives a glimpse into the dynamics of the ES Revitalization Period which bridged the JTPA and WIA policy regimes. This data set not only includes the subsidies investigated in previous chapters but new subsidies such as skills training and job search support. In addition, because of the reporting requirements states had to follow, this data set contains greater detail with regard to critical research questions posed in previous chapters.

7.1.1 Historical Context

In 1991, as a result of the decentralization and restructuring of the USES throughout the 1980s and early 1990s, the GAO found “wide variations in local office performance indicate that active assistance from Labor may help to improve effectiveness of their programs” (Balducci, 1997, p. 470).

By 1994, federal and state policymakers had developed a series of objectives to better facilitate service provider collaboration and competition in a workforce system that was substantially fragmented. USDOL incorporated these new objectives which focused on improved customer service that integrated technological improvements in service provision, increased labor market information to assist in job search and preparation, and the development of “One-Stop Career Centers” (OSCCs) designed to be delivery hubs of

streamlined workforce development services (Balducchi, 1997).

In addition, a renewed emphasis was placed on outcomes of SES customers, including customer satisfaction (Balducchi, 1997). Performance and accountability measures such as these increased in emphasis during this time largely because of the Government Performance and Results Act of 1993 which brought about greater accountability (OECD, 1999).

This focus on performance was part of a larger “ES Revitalization Work Plan” launched by DOL in 1994 aimed at improving information and services to customers.

This plan established three tiers of service to customers:

Tier I – Self-Help (resource center and automated self-help system containing information on jobs, and job search assistance);

Tier II – Basic Intervention (basic assessment and services, such as referral to jobs, job search assistance, and training);

Tier III – Intensive Services (job seekers could be served by ES or referred to other workforce development programs) (Balducchi, 1997, p. 472).

The Clinton administration also placed great emphasis on labor market information and fostered America's Labor Market Information System (ALMIS). The goal of this effort is to provide one-stop access to a wealth of labor market information to SES customers. In many ways, innovations in technology and dissemination in the 1990s were utilized to deliver this information.

At the same time, the Interstate Job Bank was replaced with America's Job Bank (AJB). In 1995, AJB became fully accessible on the Internet (Balducchi, 1997). By 1997, virtually every state employment agency had linked their job openings databases with AJB (OECD, 1999). By the middle of 1998, AJB contained approximately 712,500

job openings (OECD, 1999).

7.1.2 Theoretical Context

The three-tiered service model implemented during this period represents two significant impacts for this study. First, the separation of services by tiers represents a new intermediation direction of the SESA serving as an information gatekeeper for job seekers and employers. While Tier I services (self-help) provide an approach with low marginal costs for the SESA to serve clients, the information gatekeeper model can lead to a different set of indirect network externalities. For example, employers may want to post jobs to ensure their openings compete with the postings of other employers. However, their desire to participate will be contingent upon the demand for information in the market by job seekers, and the amount of employers already participating. Similarly, the demand for information by job seekers will be tied to the exclusivity of the information possessed by the SES and the number of employers participating. In addition, the market share of the SESA in the information market also plays a factor in the decision of both employers and job seekers. Nevertheless, while this is an intriguing dynamic to explore, the data available for such an analysis are limited and beyond the scope of this paper. For more information on information gatekeepers and the role of market forces and indirect network externalities, see Baye and Morgan (2001).

The second impact brought about by the tiered service model is a clear delineation between levels of value addition / broker activities that has not been established in the past. This helps separate the value addition / broker influence activity of training (Tier

III) found in Spulber (1996a) and Myerson and Satterthwaite (1983) from bargaining mediation represented in basic employment counseling (Tier II) as seen in Yavas, Miceli, and Sirmans (2001). This in turn helps identify with greater specificity how each of these services serves as a subsidy to facilitate employer and job seeker behavior.

7.1.3 Testing the Hypothesis

This chapter will analyze a panel data set comprised of 46 SESA from 1992 to 2002 to further test the hypothesis that the USES in partnership with SESA operates as a two-sided platform and can use strategic subsidies to coordinate employer and job seeker behavior. The detailed nature of this data set will facilitate the investigation of several research questions posed in previous chapters. Thus, the analysis in this chapter will explore (1) how employment demand affects employer participation, (2) the impact of job seeker participation on employer participation, (3) the impact of UI benefits, job seeker testing, employment counseling, skills training, job search support and the presence of employed job seekers on the participation of employers, (3) how employment demand affects job seeker participation, (4) whether job seeker behavior is influenced by the number of job openings posted, and (5) the impact of UI benefits, job seeker testing, employment counseling, skills training, job search support and the presence of employed job seekers on the participation on job seeker participation.

7.2 Data

7.2.1 Data Sources

The data used for this analysis are part of a unique set assembled by the author. Beginning July 1, 1992, each state was required by the JTPA-amended Wagner-Peyser Act to submit quarterly labor exchange reports to the Employment and Training Administration. To fulfill this reporting requirement, states completed the revised ETA 9002 form according to the ETA Handbook Bo 406, *ETA 9002 Data Preparation Handbook*.

ETA provided the author with annualized program year counts of this reporting which took place from July 1, 1992 through June 30, 2002. The author combined these data with UI initial claims data from ETA as well as unemployment levels from BLS.

While this data set has some limitations as noted below, it also facilitates a unique understanding of the role of job seeker employment status, aptitude testing, counseling and job seeker training in employer and job seeker behavior. These data series are described below.

7.2.1.1 Unemployment

Monthly, seasonally adjusted unemployment levels were averaged by program year to reflect employment demand consistent with the reporting periods of the labor exchange activities. However, as a representation of a point in time, one must be careful when comparing unemployment levels with counts of administrative data which reflect cumulative activities for 12 months. Consequently, for the subsequent analysis, the raw

unemployment levels are used; however, for regression analysis, the natural log growth rate transformations of each variable are used instead.

7.2.1.2 UI Initial Claims

One example of where care must be taken with comparisons is with UI initial claims and unemployment. Figure 7.1 displays this comparison. Note that UI initial claims did not exceed unemployment for any given period of time. Rather, the magnitude differences are due to counting methodologies. However, what can be seen from Figure 7.1 is the relatively consistent way UI initial claims track with unemployment levels. Unemployment levels and UI initial claims both bottomed in 1999 before rising rapidly to program year 2001, which ended June 30, 2002 and includes the terrorist attacks and subsequent economic impact of September 11, 2001.

Nevertheless, despite the close relationship between unemployment and UI initial claims, the role of a subsidy to attract job seekers appears to have a lesser influence than in previous chapters. This can be inferred when looking at the next section and identifying the number of applicants who use the SESA. This suggests the emergence of a new subsidy which will be discussed later in this chapter.

7.2.1.3 Total Active Applicants

While previous chapters utilized new applicant counts to capture job seeker behavior, no corresponding reporting category is available with the ETA 9002 report data. Whereas new applicants represent the net flow of applicants, total active applicants

represents the entire stock of applicants. This leads to significant counting differences. A new applicant is only counted the month or year of the initial registration. They are only counted 12 months later if they reapply with the SES. Total active applicants, however, will track an applicant as long as he or she is active. Since registrations last as long as 12 months, this means the same applicant can be counted on four quarterly reports. Nevertheless, this data series is the best available across states to reflect job seeker activity.

Figure 7.2 charts counts of total active applicants versus those applicants who are unemployed and monetarily eligible to receive UI benefits any time during the program year. While the magnitude of total applicants seems to consistently exceed UI eligible applicants, these two series appear to track more closely than in previous chapters where applicant counts appeared equally driven by job openings as they were by the UI subsidy. This is further observed in Figure 7.3 where counts of total applicants, unemployed applicants and unemployment also track each other. Thus, counts of total applicants and related series such as unemployed and UI-eligible appear highly dependent on labor market conditions.

The disparity between the counts of UI eligible applicants in Figure 7.2 and unemployed applicants in Figure 7.3 may be explained by the following reasons. First, not all unemployed individuals are monetarily eligible to receive UI benefits. This could be because of inadequate work history or because of recently exhausting benefits. Second, a job seeker may not have worked for an employer covered under UI legislation and thus is not entitled to UI benefits. Finally, a job seeker may have only worked part-

time in the past, and not accrued adequate wages.

7.2.1.4 Job Openings

Job openings reflect the total number of jobs posted with a SES by an employer. If, for example, an employer posts five jobs of the same type with a SES, that one job order will count as five job openings.

Figure 7.4 demonstrates the cyclical nature of job postings as witnessed in previous chapters continues in this analysis as well. In this example, job openings are tracked versus counts of UI eligible applicants. Thus, UI applicants decline from PY 1992 through PY 1999 and then climb through PY 2001. Conversely, job openings increase from PY 1992 through PY 1999 and subsequently decline through PY 2001.

The job seeker measurement difference in this chapter may be the reason behind a different relationship between job seeker and employer activity counts. As can be seen in Figure 7.5, whereas new applicants often increased when more jobs were posted, total applicant counts actually declined as job openings increased. This suggests total applicant counts are more heavily driven by UI claimant activity than new applicant counts observed in previous chapters.

7.2.1.5 Applicant Employment Status

Each SES was required to identify whether an applicant was employed or unemployed at the time of initial registration. Specifically, an applicant was considered employed if they were currently working as a paid employee, or owned their own

business or farm. An individual would also be considered employed if they had a job but were laid off or unable to work because of illness, weather, labor management disputes, vacation, or personal reasons. On the other hand, applicants were considered unemployed if they did not meet the conditions for employment or they had received a notice of termination of employment prior to registering with the SES.

Figure 7.6 tracks the average percentage of employed applicants versus the average unemployment rate during this period of time. These reveal the percentage of employed job seekers is less than Lindeboom, Van Ours, and Renes (1994) who identified 25% of applicants as employed in the Netherlands. The maximum average from this data set is less than 16% which occurred in PY 2000. However, the chart does support the findings of Adnett (1984), namely that as unemployment falls, employed job seekers are more likely to register with the SESA. Adnett (1984) considers this a positive dynamic because it is presumed the employed job seekers are more skilled than the unemployed and can positively influence the reputation of the SES with employers.

7.2.1.6 Individuals Counseled and Counseling Transactions

Employment counseling provides applicants with onetime or ongoing assistance with the goal of helping the applicant gain a better understanding of who they are and what occupations are the most realistic for them to pursue. This activity often includes developing a plan with steps and a timetable to achieve an occupational goal. Counseling can be individual or take place in a group setting.

Figure 7.7 displays counts of unique individuals counseled as well as the total

number of counseling events which could include serving a particular individual more than once during a program year. As can be seen, counseling activities were relatively flat but began declining in PY 1998. This may be a byproduct of the increased use of technology and heavier reliance on self-assistance during this period. Counseling activities can only be reported as such when provided by a qualified counselor or counselor trainee.

7.2.1.7 Testing Transactions and Individuals Tested

USDOL did not mandate any standardized tests that states need to administer to job seekers during this time. The individuals tested counts reflect unique individuals who were administered any type of standardized test during the program year. Testing transactions, however, reflect counts of the total number of standardized tests administered, allowing for the case where multiple tests can be administered to the same individual.

During this time period, both counts of individuals tested and counts of testing transactions followed a downward trend, until leveling off from PY1999 through PY 2001 as can be seen in Figure 7.8. Also, Figure 7.9 displays that average counseling transactions outpaced average testing transactions throughout the entire period, reflecting a prioritization of activity similar to that of the CETA years.

For a state to report its testing activities to ETA, the test administered must “measure the individual’s possession of, interest in, or ability to acquire job skills and

knowledge.”⁴³ However, this lack of specificity or commonality across states creates a challenge with interpreting the impact of individuals tested or testing transactions.

7.2.1.8 Education and Training Referrals

This data set also features counts of applicants being referred to skills training and educational services. Skills training consists of any state or federal training program focused on developing job-related competencies. Educational services, on the other hand, include any “program or course designed to develop competency in basic educational skills such as reading comprehension, mathematics, writing, speaking and reasoning and/or programs leading to educational credentials such as a GED or high school diploma or college degree.”⁴⁴

Figure 7.10 charts the average counts of referrals to skills training and educational services. What is clear from this chart is how government-funded skills training represented a substantial portion of all training referrals during this time while educational services represent a much smaller component. However, the dynamics affecting the counts of these referrals are quite different. While skills training referrals appear to fluctuate with the business cycle, educational services referrals appear to grow steadily during this time.

Because referrals to training often took place in the employment counseling process in the past, it is helpful to see how these specific activities compare with each

⁴³ ETA Handbook No. 406, *ETA 9002 Data Preparation Handbook*, p. III-8.

⁴⁴ ETA Handbook, III-10.

other in this new detailed data set. Figure 7.11 compares the average counts of individuals counseled and individuals referred to skills training. While there still could be overlap between these two activities, the separation provided by Figure 7.11 provides a better understanding. Both series seem to track closely, following the trend of unemployment levels. The exception happens in PY 2001 where skills training referrals continue to increase with unemployment while employment counseling continues its downward trend.

7.2.1.9 Job Search Support

One uniquely identified activity in this data set that in previous chapters also has fallen under the umbrella of employment counseling is that of job search support.⁴⁵ This broad category includes a variety of services designed to help applicants effectively execute a job search. However, this activity represents the SES acting as an information gatekeeper intermediary, rather than one that adds value via brokering or subsidization. Thus job search support includes resume assistance, job search workshops, job finding clubs, providing specific labor market information and job search planning.

This information-centric activity coincides with the USES trends of greater use of technology and to a degree, self-service. While this activity is not part of the research scope of this paper, it is included to provide context for this period in USES history. For reference, Figure 7.12 compares average counts of job search support with those of

⁴⁵ ETA uses the term “Job Search Activities” but the author has used Job Search Support to provide greater clarity to the reader.

employment counseling. What is evident from this chart is the substantially greater emphasis on providing job search information rather than employment counseling. In fact, while job search activity assistance steadily grows, employment counseling declines.

Previously in section 7.2.1.5, it was suggested that a new subsidy may be influencing the participation of job seekers. Given the data in Figure 7.12, it is reasonable to suggest that this subsidy could be job search information. Job seekers participate in the SESA because of the information they can receive about the labor market and how to find a job.

7.2.2 Transformations

Given the annual nature of the data, no seasonal adjustments were made to the data. However, for the correlation, regression and diagnostic analysis, six states were excluded due to inconsistent reporting resulting in missing values: California, Massachusetts, Michigan, Minnesota, Ohio and Oregon.

Finally, as with previous chapters, each data series was converted to a natural log growth rate according to the formula found in Equation 7.1 below for each state s .

$$\hat{w}_{st} = \ln(x_{st}) - \ln(x_{st-1}) \quad (7.1)$$

7.2.3 Univariate and Bivariate Analysis

To provide additional context for this analysis, Table 7.1 displays the descriptive statistics of each series. As can be seen, each data series is evenly distributed with the

exception of employment counseling, which skews somewhat negative. This could be a byproduct of the reduced emphasis on employment counseling through this period. In addition, it should be noted that the observations are the same for each series. This is because the six states with inconsistent reporting were excluded from this analysis. In addition, the District of Columbia, was included in this data set because it is considered a state for ES partnership purposes.

In addition to the descriptive statistics, Pearson Correlations were run on each pair of data series. These results are displayed in Table 7.2. As can be seen from this table, a few of the correlations are worth highlighting. First, the correlation between job openings and total applicants is no longer significant; however, there is a new correlation of interest between job openings and skill training (0.15747). Similarly, total applicant counts are also significantly correlated with skills training (0.32990) as well as job search support (0.28291). The correlation between counseling and skills training (0.14973) as well as counseling and job search support (0.18667) reflect the likely co-occurrence of these services as delivered by the SESA.

A few correlations raise the concern of possible multicollinearity. Of particular interest is the high correlation between total applicants and unemployed applicants as well as that between unemployment and UI initial claims. To ensure no multicollinearity exists, analysis of variance inflation factors and the tests developed by Belsley, Kuh, and Welsch (1980) were performed. Both sets of tests rejected the presence of multicollinearity.

7.3 Model Results

Employer and job seeker SESA participation will be analyzed across i states and t years with a VARX(0,0) random effects model according to Equation 7.2 below:

$$\begin{pmatrix} j_{it} \\ n_{it} \end{pmatrix} = \alpha u_{it} + \beta e_{it} + \gamma c_{it} + \delta s_{it} + \varepsilon r_{it} + \epsilon_{it} \quad (7.2)$$

where j_{it} denotes job openings, n_{it} represents total applicants, u_{it} , e_{it} , c_{it} , s_{it} and r_{it} represent unemployment, employed applicants, counseling, skills training and job search support while ϵ_t represents a white noise process.⁴⁶

Several parameters were considered in the selection of this model. Due to the brevity of the years available, smaller numbers of autoregressive orders and lags were examined. Thus, only autoregressive orders of $p=0, \dots, 3$ and lags of $s=0, \dots, 3$ were tested. The parameters of $p=0$ and $s=0$ exhibited the lowest AICc of -6.43180 as can be seen in Table 7.3.

To ensure that a random effects model was appropriate for this panel data set, Hausman tests were conducted for each dependent variable. The results are displayed in Table 7.4 and confirm a random effects approach is appropriate for this analysis.

⁴⁶ Following Belsley, Kuh, and Welsch (1980), tests were performed for the presence of multicollinearity across independent variables as well as variance inflation factor analysis. No indication of multicollinearity was present across the independent variables.

7.3.1 Employer Behavior: Job Openings Posted

The results of the employer regression analysis can be viewed in Table 7.5. *F*-Test results for all the variables are displayed in Table 7.6 in keeping consistent with the pattern established in previous chapters, although the nature of the model implies the *F*-Test results will largely replicate the *t*-statistics in the regression results. Also, in previous chapters that examined monthly data, the process of employer behavior was demonstrated to fluctuate over a period of 3 months. Thus, it is not surprising that the autoregressive term is not necessary for this annual model.

Each of the previous chapters found that employer participation was regularly influenced by employment demand. Employers would post more jobs during periods of lower unemployment. However, the regression results and *F*-Tests indicate employment demand does not have a statistically significant impact on employer demand for this data series. Sometimes this influence is only evident from the influence of initial claims. Yet, this lack of relationship is still evident when looking at the impact of both the unemployment and the initial claims independent variables, except at the 10% significance level.

It is possible this result is due to the ES Revitalization efforts taking place during this period. USES made significant attempts at engaging employers and these results may in fact validate the implemented changes. If true, this would suggest employer behavior transitioned from being driven by employment demand to being driven by other factors. This is plausible in that job openings and unemployment are still negatively correlated (-0.14235), but less than in previous chapters. It is also possible that these new

factors were successful due to indirect network externalities present in employer behavior.

Previous chapters also found mixed results when investigating employer behavior for the presence of indirect network externalities, namely that employers are more likely to participate if they believe qualified job seekers are available on the USES platform. Utah monthly data from the Foundational Period appeared to support this reality while the annual Utah data appeared to disprove it. This conflicting result suggested that the time period of analysis may be a factor in observing this aspect of employer behavior.

The two key variables used to investigate this hypothesis were job seeker testing and employment counseling. These activities provided a validation step to the employment matching process helping to ensure the employers find qualified job seekers on the USES platform. In the analysis of this chapter, these variables are only significant at the 10% level. Considering this chapter also features annual data, it is once again possible that this aspect of employer behavior can only be observed at the monthly level.

However, the significance of skills training indicates ongoing validity to the presence of narrow indirect network externalities. By providing job seekers with skills training and increasing their qualifications, this activity had a positive impact on employer behavior. In fact, the importance of this factor obfuscated the role typically played by employment demand in previous chapters. Employers during this period posted jobs with the expectation they would find a qualified job seeker on the USES platform.

One additional note that should be mentioned relative to this hypothesis is the

lack of significance employed job seekers played in employer behavior. Adnett (1984) postulated that employed job seekers attract the participation of employers because employed job seekers possess greater skill sets than those who are unemployed. While that feature may be true of the UK data set analyzed by Adnett (1984), the opposite appears to be the case across the United States during this period. The employment status of job seekers appears to be far less of a factor to employers than skills training.

7.3.2 Job Seeker Behavior: New Applications

The regression estimates for job seeker behavior are displayed in Table 7.7 with the results of the *F*-Tests displayed in Table 7.8. In previous chapters that analyzed monthly data, job seeker behavior appeared to follow a 6-month process. Consequently, it is not surprising that with the annual data of this chapter, no new applicant autoregressive terms are significant for the model.

Each previous chapter using Utah data has found that job seekers are more likely to participate when unemployment is higher. The regression results of this chapter are consistent with these findings. However, what is different than observed previously is the lessened impact of initial claims. One reason for this result may be due to the difference in how job seekers are counted in this chapter compared to others, namely total applicants in this chapter versus new applicants in previous chapters. Total applicant counts represent a stock of job seekers available as opposed to the net increase of new job seekers who registered. While this change in reporting may be the cause, the difference is still worth noting.

Nevertheless, what remains consistent with previous chapters is the lack of indirect network externalities in the presence of job seeker behavior. Even as in previous chapters, the presence of job openings does not appear to persuade job seekers to register with the SESA.

Yet, it should also be noted that the new subsidies investigated in this chapter demonstrate a positive impact on job seeker participation: Job Search Support and Skills Training. The significance of this Job Search Support on job seeker behavior appears to provide credence to the theory of Adnett (1984) that users of the PES have less sophisticated employment information networks. This is further evidenced by the fact that job search support has a weak correlation with unemployment (0.10831) suggesting a more systemic need for job search information on behalf of USES job seekers.⁴⁷ Using technology and the tiered service model, job search support can be provided to a much larger volume of job seekers than ever before. If job seekers who use the USES tend to have this need, this service can attract their participation across the business cycle.

Likewise, the significance of skills training demonstrates that job seekers feel their qualifications or inadequate based on what is needed in the labor market. However, skills training has a very low correlation with unemployment (0.09817), suggesting it is a need which transcends labor market conditions. This is especially significant because this was the subsidy to job seekers that was highly influential in encouraging employer participation.

Unlike job search support, skills training is not a new service provided to job

⁴⁷ Table 7.2 displays all Pearson correlation coefficients.

seekers although the specificity of its reporting category is. Thus, the ability to analyze its effectiveness is greater with this data set than with the others used in this paper. In fact, skills training has been a key policy piece since MDTA. However, due to the agencies that administered the training program and the relationship between these agencies and USES, its effectiveness in reaching job seekers is very difficult to detect. With the ES Revitalization regime and the new integration of services and reporting, the effectiveness of skills training is now far more evident.

The importance of skills training also explains the hints at the importance of employment counseling to job seeker participation. One aspect of employment counseling is assessing the job-readiness of a job seeker and any critical skills gaps that need to be addressed. Thus, counseling can often lead to skills training. Because training is a more time consuming process, it is observable in this annual data series. However, counseling can lead to other outcomes, such as helping employers see past age or disability or even adjusting the occupational expectations of a job seeker. In these circumstances, counseling provides positive externalities to employers because it increases the number of qualified job seekers available; however, because these outcomes are short-term, it is less likely they will appear in annual data.

The impact of these subsidies also provides implications for the question as to whether USES policy can effectively implement strategic subsidies to coordinate employer and job seeker behavior and maximize transaction volume. The analysis of this chapter seems to suggest that this indeed possible.

Higher search costs provide an incentive for agents such as employers and job

seekers to use an intermediary. For employers, they are not just searching for job seekers, but qualified job seekers. They will participate if they believe they can find qualified job seekers on the USES platform. However, the job seekers who appear to be using the USES platform have a tendency to lack job-ready skills and appropriate information networks to find employment. These two factors increase the search costs for job seekers regardless of the business cycle. When the USES provides skills training and job search support, it reduces the search costs for these job seekers and encourages USES participation. However, because these efforts also improve their qualifications, employers are encouraged to participate as well. This enables the USES to meet the needs of both employers and job seekers regardless of labor market conditions and thus fulfill its mission.

7.4 Conclusion

This chapter explored to what degree the results of the previous chapters could be generalized to the US workforce system as a whole by analyzing a panel data set comprised of 45 states' employment service administrative data from 1992 to 2002. In addition, the detail with which these data were reported enabled the inquiry and resolution of key questions that emerged in previous chapters.

Consistent with previous chapters, this chapter demonstrated that employers post more job when unemployment is lower; however, the impact of employment demand on employer participation was far less than in previous chapters. In addition, employers are also driven to participate if they believe qualified job seekers participate on the USES

platform. This reflects the presence of indirect network externalities and provides initial evidence the SESA do operate as intermediaries on a two-sided platform.

Also consistent with previous chapters, this chapter found that job seekers are more likely to participate when unemployment is higher. However, unlike in previous chapters, initial claims did not appear to be the significant factor influencing job seeker participation. Instead, innovative subsidies that were less linked to the business cycle, such as job search support, appeared to influence job seeker participation greater than UI benefits.

One additional key finding is that providing skills training to job seekers positively influenced employer participation. Because skills training appears to attract job seekers across the business cycle, this may represent one of the most effective subsidies at helping the USES coordinate the behavior of employers and job seekers, regardless of labor market conditions. This in turn helps the USES better achieve its mission of influencing unemployment rather than being influenced by it.

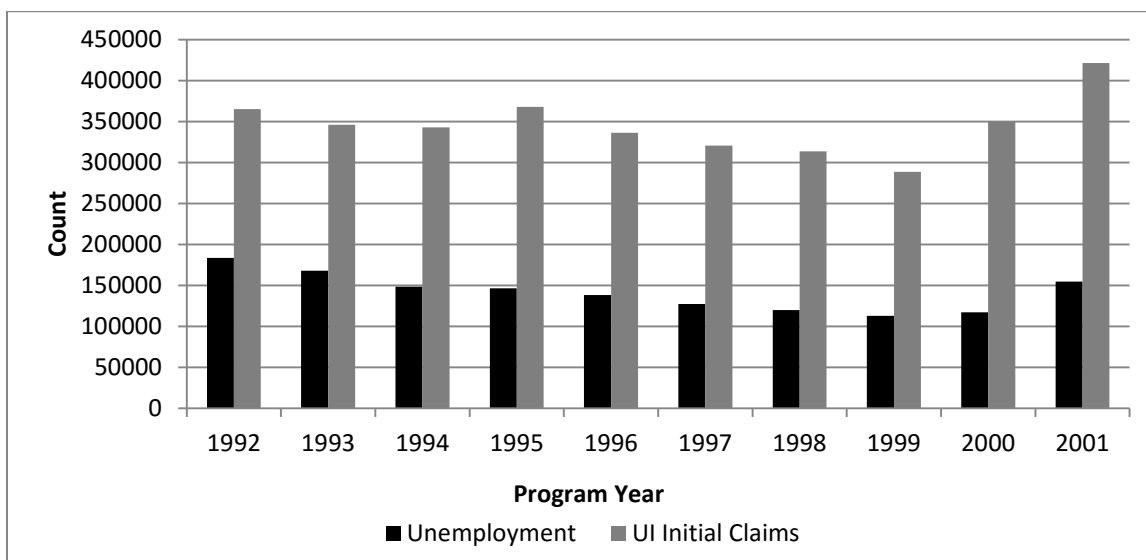


Figure 7.1. Annual averages of unemployment and total counts of UI initial claims⁴⁸

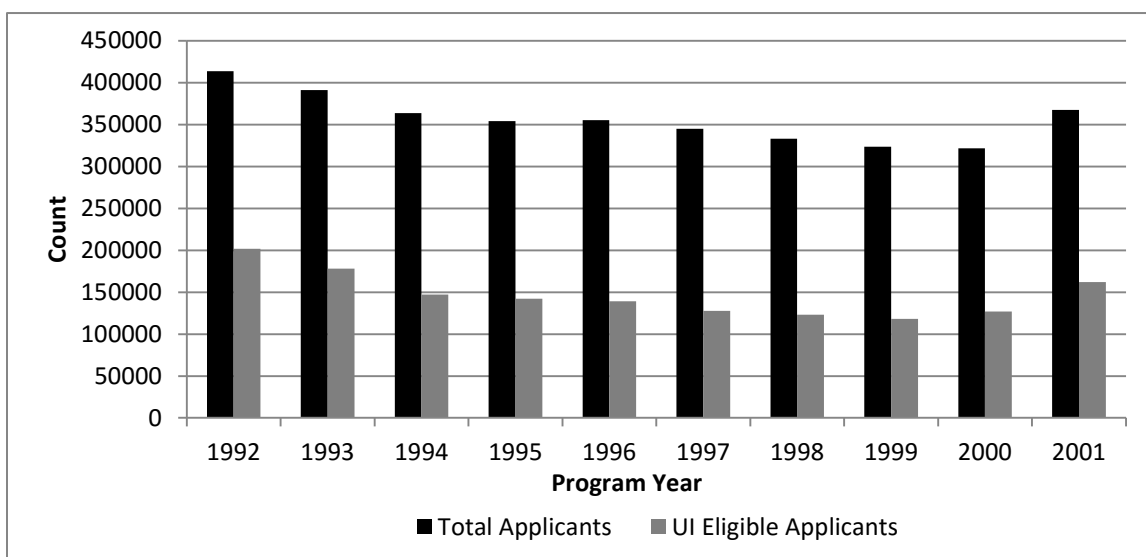


Figure 7.2. Annual averages of total ES applicants and ES applicants who qualify for UI benefits⁴⁹

⁴⁸ These data are displayed with mixed periodicity to illustrate their relationship. If UI initial claims were presented as a monthly average, the magnitude between the two series increases and inhibits understanding. Source: Employment and Training Administration and Bureau of Labor Statistics.

⁴⁹ Source: Employment and Training Administration

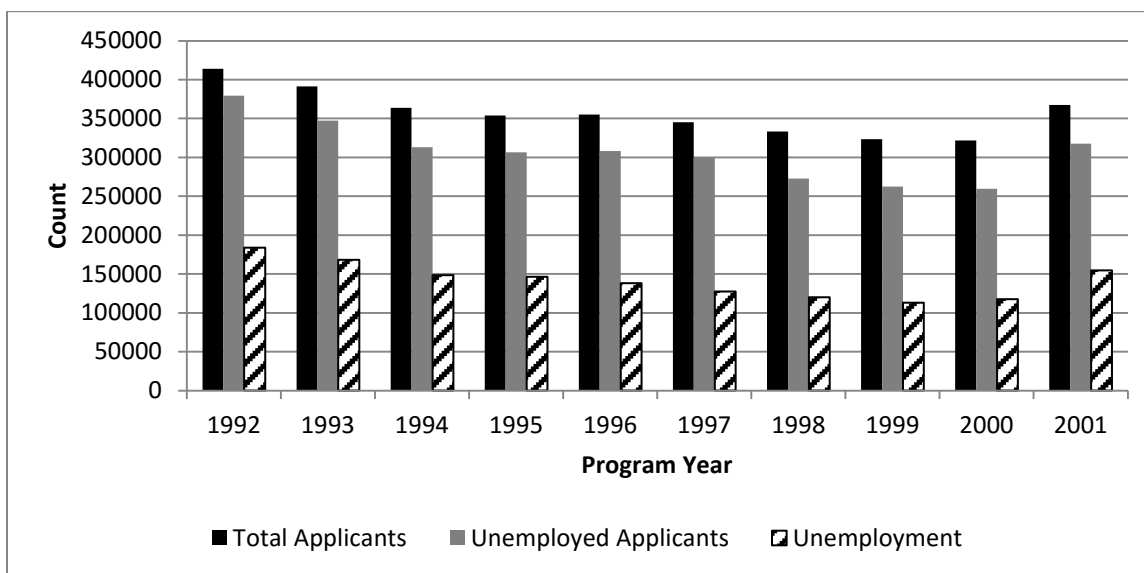


Figure 7.3. Annual averages of total ES applicants, unemployed ES applicants and unemployment⁵⁰

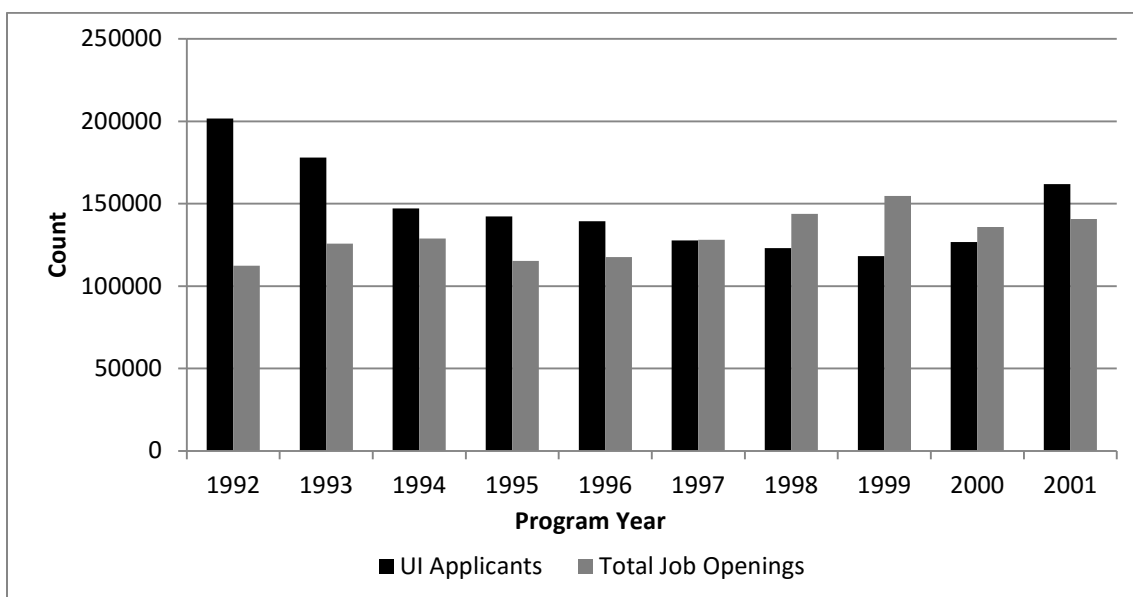


Figure 7.4. Annual average counts of UI eligible applicants and total job openings⁵¹

⁵⁰ Source: Employment and Training Administration

⁵¹ Source: Employment and Training Administration

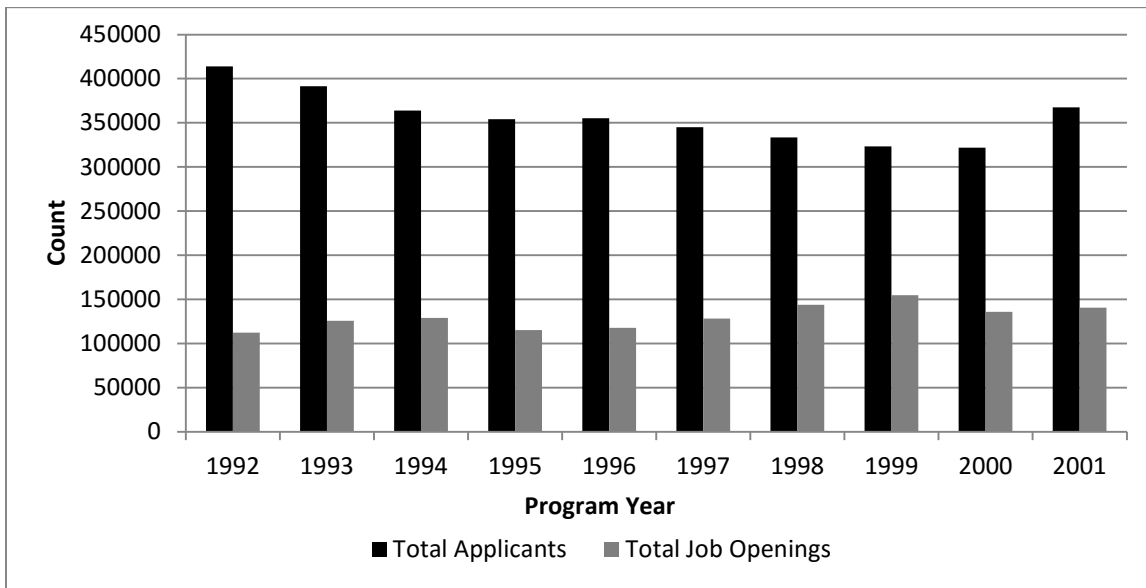


Figure 7.5. Annual average counts of total ES applicants and total ES job openings⁵²

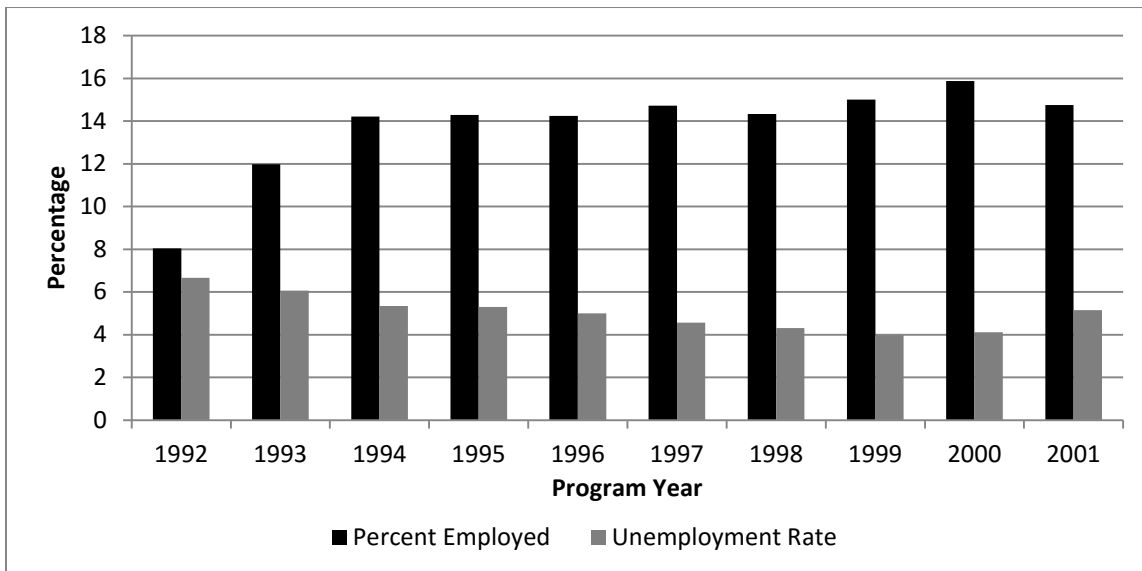


Figure 7.6. Comparison of average percent employed ES applicant and the average unemployment rate⁵³

⁵² Source: Employment and Training Administration

⁵³ Source: Employment and Training Administration and Bureau of Labor Statistics

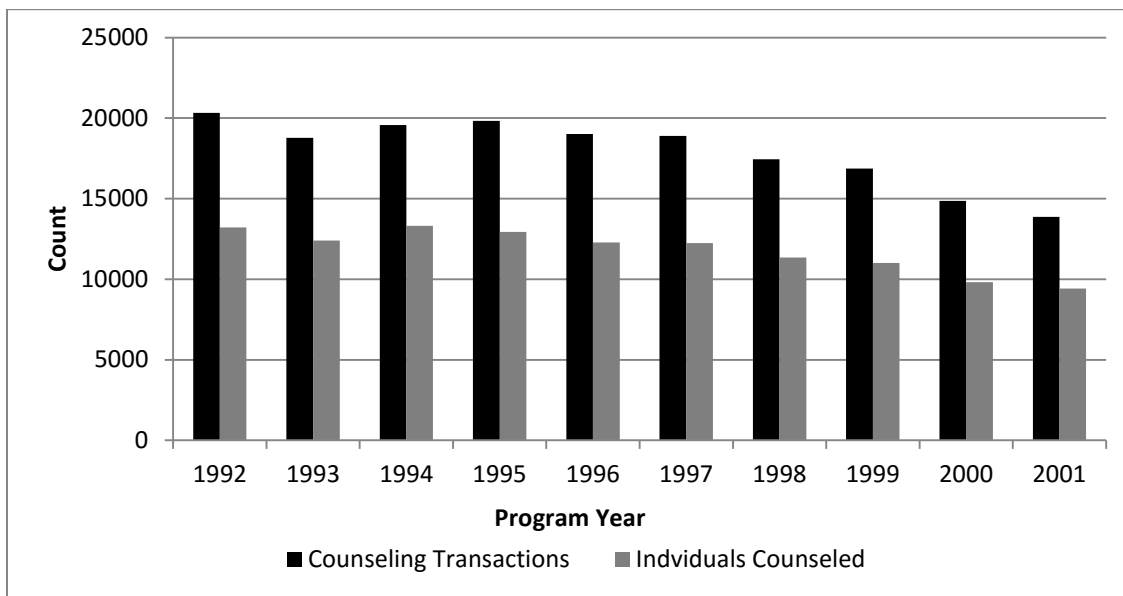


Figure 7.7. Annual average counts of counseling transactions and individuals counseled⁵⁴

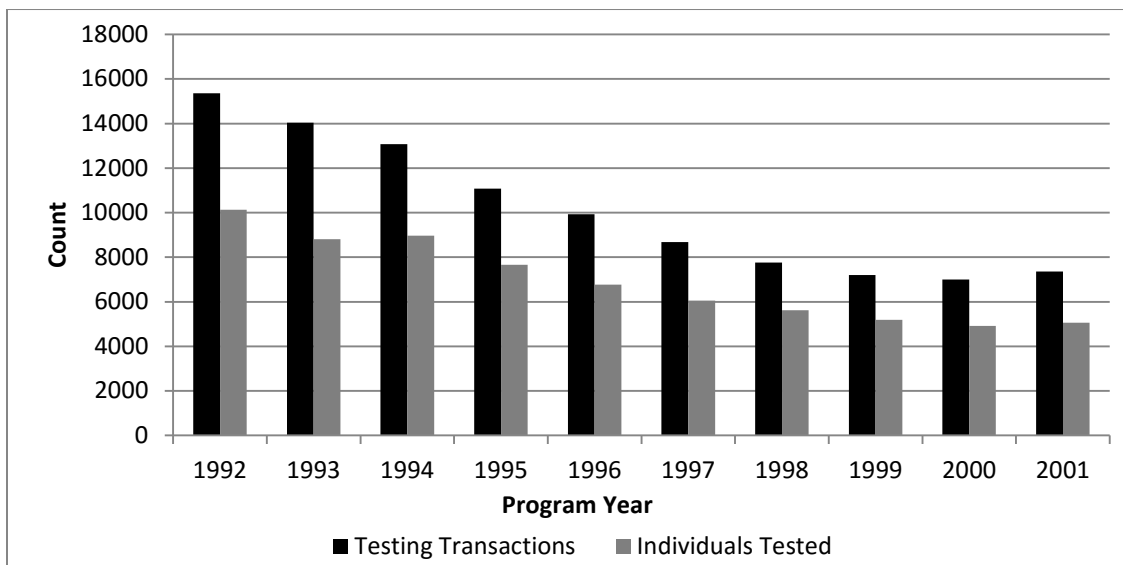


Figure 7.8. Annual average counts of ES testing transactions and individuals tested⁵⁵

⁵⁴ Source: Employment and Training Administration

⁵⁵ Source: Employment and Training Administration

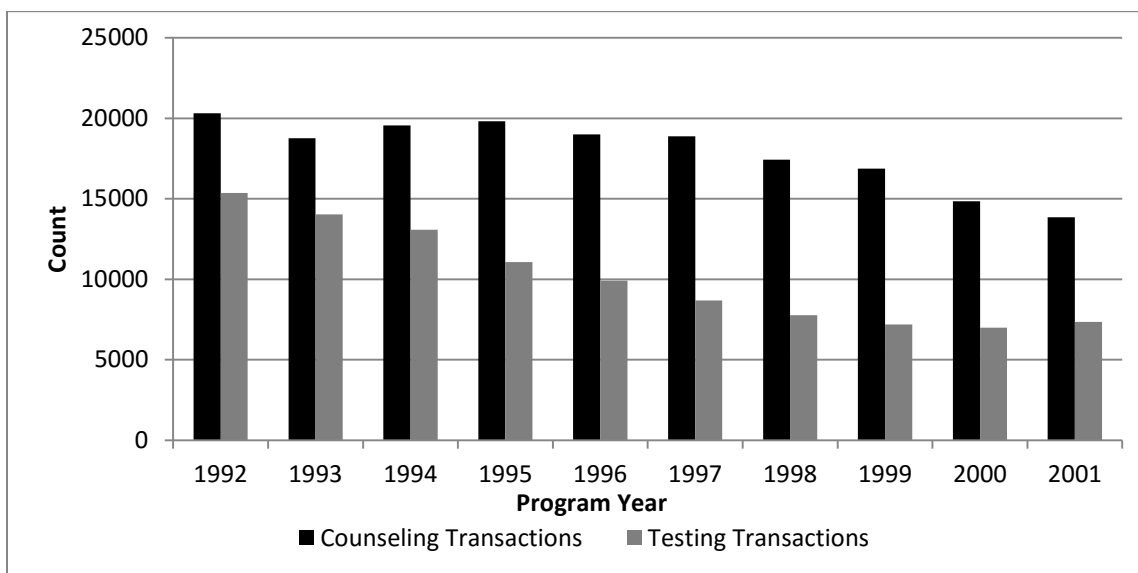


Figure 7.9. Annual average counts of counseling transactions and testing transactions⁵⁶

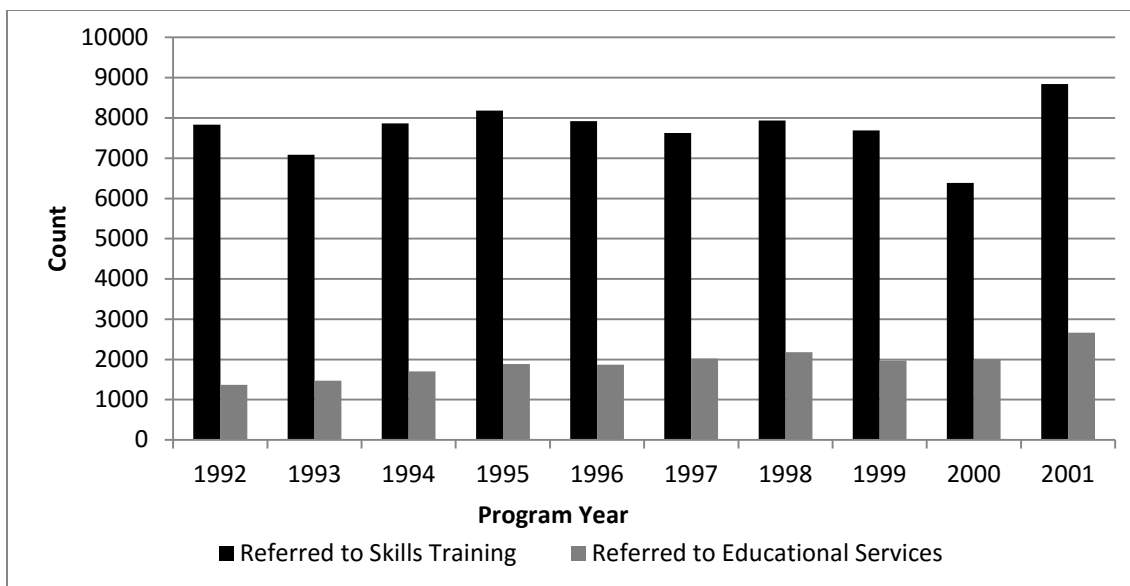


Figure 7.10. Annual average counts of individuals referred to skills training versus those referred to educational services⁵⁷

⁵⁶ Source: Employment and Training Administration

⁵⁷ Source: Employment and Training Administration

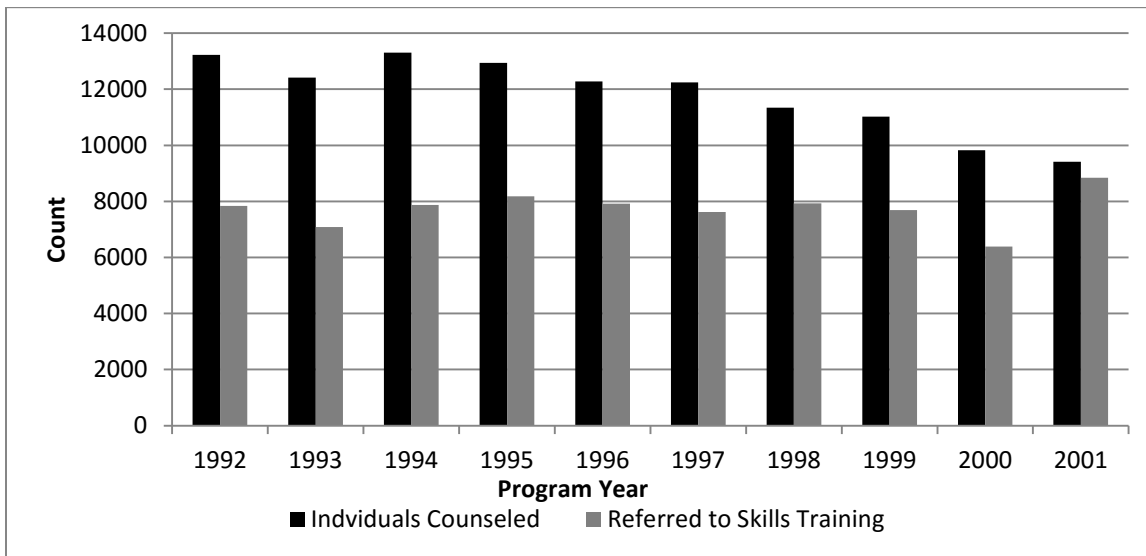


Figure 7.11. Annual average counts of individuals counseled versus those referred to skills training⁵⁸

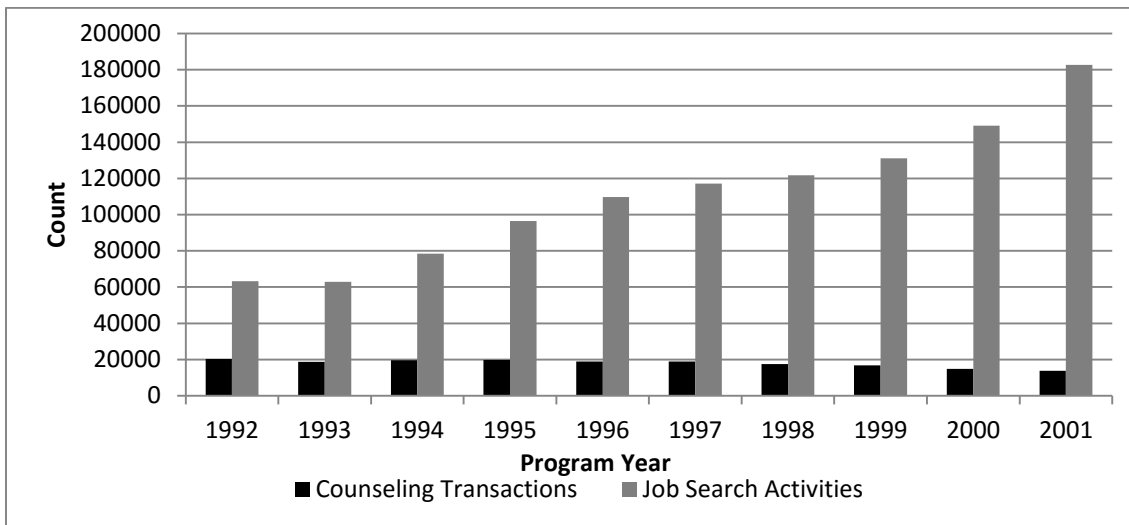


Figure 7.12. Annual average counts of counseling transactions versus job search support⁵⁹

⁵⁸ Source: Employment and Training Administration

⁵⁹ Source: Employment and Training Administration

Table 7.1. Descriptive statistics of annual growth rate variables

	<i>N</i>	Mean	<i>SD</i>	Median	Minimum	Maximum
Unemployment	405	-0.0143746	0.1351729	-0.0352000	-0.3586000	0.5907000
Initial Claims	405	0.0155333	0.1410084	-0.0125000	-0.4361000	0.5811000
Total Applicants	405	-0.0194156	0.1602069	-0.0251000	-0.8698000	1.2839000
Job Openings	405	-0.0173647	0.2968194	-0.0130000	-1.9161000	2.5081000
Counseling Transactions	405	-0.0889094	0.5384851	-0.0500000	-4.7140000	2.1411000
Testing Transactions	405	-0.1131983	0.5874308	-0.1011000	-5.0637000	4.9955000
Employed Applicants	405	0.0445884	0.3613977	0.0041000	-1.8405000	1.9792000
Skills Training	405	0.0028390	0.5363239	-0.0052000	-3.3440000	2.5802000
Job Search Support	405	0.1309916	0.3750168	0.1158000	-1.4536000	1.8820000

Table 7.2. Pearson Correlation coefficients for annual growth rates

	Job Openings	Total Applicants	Unemployment	Employed Applicants	Initial Claims	Testing Transactions	Counseling Transactions	Skills Training	Job Search Support
Job Openings	1.00000	0.01302 (0.7940)	-0.14235 (0.0041)	0.07073 (0.1554)	-0.16007 (0.0012)	0.13707 (0.0057)	0.12192 (0.0141)	0.15747 (0.0015)	0.04206 (0.3986)
Total Applicants	0.01302 (0.7940)	1.00000	0.35835 (<.0001)	0.14332 (0.0038)	0.25522 (<.0001)	0.14792 (0.0028)	0.22558 (<.0001)	0.32990 (<.0001)	0.28291 (<.0001)
Unemployment	-0.14235 (0.0041)	0.35835 (<.0001)	1.00000	-0.08577 (0.0847)	0.56910 (<.0001)	0.04188 (0.4006)	0.05043 (0.3114)	0.09817 (0.0484)	0.10831 (0.0293)
Employed Applicants	0.07073 (0.1554)	0.14332 (0.0038)	-0.08577 (0.0847)	1.00000	-0.03645 (0.4644)	0.07521 (0.1308)	0.12792 (0.0100)	0.03211 (0.5193)	0.05722 (0.2506)
Initial Claims	-0.16007 (0.0012)	0.25522 (<.0001)	0.56910 (<.0001)	-0.03645 (0.4644)	1.00000	-0.07867 (0.1139)	0.00679 (0.8916)	0.07093 (0.1542)	0.06459 (0.1946)
Testing Transactions	0.13707 (0.0057)	0.14792 (0.0028)	0.04188 (0.4006)	0.07521 (0.1308)	-0.07867 (0.1139)	1.00000	0.20995 (<.0001)	0.15511 (0.0017)	0.19375 (<.0001)
Counseling Transactions	0.12192 (0.0141)	0.22558 (<.0001)	0.05043 (0.3114)	0.12792 (0.0100)	0.00679 (0.8916)	0.20995 (<.0001)	1.00000	0.14973 (0.0025)	0.18667 (0.0002)
Skills Training	0.15747 (0.0015)	0.32990 (<.0001)	0.09817 (0.0484)	0.03211 (0.5193)	0.07093 (0.1542)	0.15511 (0.0017)	0.14973 (0.0025)	1.00000	0.24559 (<.0001)
Job Search Support	0.04206 (0.3986)	0.28291 (<.0001)	0.10831 (0.0293)	0.05722 (0.2506)	0.06459 (0.1946)	0.19375 (<.0001)	0.18667 (0.0002)	0.24559 (<.0001)	1.00000

Table 7.2. Corrected Akaike Information Criterion results

		Lag of Independent Variables			
		0	1	2	3
AR	0	-6.43180	-6.39714	-6.34052	-6.29636
	1	-6.42296	-6.39146	-6.33391	-6.28903
	2	-6.40030	-6.36880	-6.31334	-6.26787
	3	-6.39253	-6.35992	-6.30306	-6.25101

Table 7.3. Hausman Test for Random Effects

Dependent Variable	DF	<i>m</i> Value	Pr > <i>m</i>
Job Openings	7	6.21	0.5152
New Applicants	7	7.89	0.3425

Table 7.4. Regression estimates for employer behavior

Variable	Estimate	Standard Error	<i>t</i> Value	Pr > <i>t</i>
Unemployment _{<i>t</i>}	-0.21141	0.1283	-1.65	0.1001
Employed Applicants _{<i>t</i>}	0.02778	0.0399	0.70	0.4862
Initial Claims _{<i>t</i>}	-0.22869	0.1229	-1.86	0.0634
Testing Transactions _{<i>t</i>}	0.048747	0.0251	1.94	0.0531
Counseling Transactions _{<i>t</i>}	0.048466	0.0273	1.77	0.0769
Skills Training _{<i>t</i>}	0.083391	0.0278	3.00	0.0029
Job Search Support _{<i>t</i>}	-0.01733	0.0375	-0.46	0.6441

Table 7.5. *F*-Test results for employer behavior

Variable	DF	<i>F</i> Value	Pr > <i>F</i>
All	F(7,398)	5.09	<.0001
Unemployment	F(1,398)	2.72	0.1001
Employed Applicants	F(1,398)	0.49	0.4862
Initial Claims	F(1,398)	3.46	0.0634
Testing	F(1,398)	3.76	0.0531
Counseling	F(1,398)	3.15	0.0769
Skills Training	F(1,398)	8.98	0.0029
Job Search Support	F(1,398)	0.21	0.6441

Table 7.6. Regression estimates for job seeker behavior

Variable	Estimate	Standard Error	<i>t</i> Value	Pr > <i>t</i>
Unemployment _{<i>t</i>}	0.36181	0.0614	5.89	<.0001
Employed Applicants _{<i>t</i>}	0.053624	0.0191	2.81	0.0052
Initial Claims _{<i>t</i>}	0.061905	0.0588	1.05	0.2930
Testing Transactions _{<i>t</i>}	0.017705	0.0120	1.47	0.1418
Counseling Transactions _{<i>t</i>}	0.043022	0.0131	3.29	0.0011
Skills Training _{<i>t</i>}	0.070035	0.0133	5.26	<.0001
Job Search Support _{<i>t</i>}	0.044217	0.0179	2.47	0.0141

Table 7.7. *F*-Test results for job seeker behavior

Variable	DF	<i>F</i> Value	Pr > <i>F</i>
All	F(7,398)	22.84	<.0001
Unemployment	F(1,398)	34.74	<.0001
Employed Applicants	F(1,398)	7.90	0.0052
Initial Claims	F(1,398)	1.11	0.2930
Testing	F(1,398)	2.17	0.1418
Counseling	F(1,398)	10.82	0.0011
Skills Training	F(1,398)	27.66	<.0001
Job Search Support	F(1,398)	6.08	0.0141

CHAPTER 8

CONCLUSION

8.1 Summary

This paper investigated the hypothesis that USES, in partnership with SESA, operates as an intermediary of two-sided market, the public labor exchange. To confirm this hypothesis, the presence of indirect network externalities needed to be identified in the behavior of either employers or job seekers. If present, then the USES could use strategic subsidies to one side of the market to get both sides of the market on board. This would enable the USES to shape policy in such a way as to maximize USES transaction volume and positively impact the US labor market.

To test this hypothesis, four data sets that each captured different aspects and time periods of USES labor exchange activity were analyzed. The research explored the participation of employers and job seekers and the impact of employment demand and policy. In addition, five subsidies were investigated to determine whether or not they exploited indirect network externalities: UI benefits, aptitude testing, employment counseling, skills training and job search support.

The analysis revealed that job seekers participate with the USES to receive UI benefits, job search support and skills training. This is a significant finding because UI

benefits lead to very cyclical job seeker participation while job search support and skills training appear to be influence job seeker participation across the business cycle.

On the other hand, employers will post jobs when employment demand increases, but they will also be influenced to participate if the USES provides skills training services to job seekers. Employment counseling and aptitude testing exhibit similar but much lesser effects. Yet, what each of these services has in common is that they exploit the indirect network externalities of employers: They will increase their participation if they believe qualified job seekers exist on the USES platform.

The fact that skills training plays a significant role in both the behavior of employers and job seeker participation provides great insight into how USES can shape future policy. By helping job seekers develop job-ready skills, the USES increases the participation of employers on the public labor exchange and, consequently, positively impacts the U.S. labor market. Thus, if there was a silver bullet for USES to pursue, it would be the provision of skills training to job seekers.

While the significance of skills training emerged in the data covering the vast portion of the United States, much of this research was limited to the Utah. While at times employment demand in Utah closely resembled that of the United States, there are times during key policy regimes where the demand is much different such as MDTA and CETA. Future research should explore the behavior of employers and job seekers in other states during these policy periods to determine how well the Utah experience represents the rest of the US.

Nevertheless, this research makes significant contributions to both the two-sided

market literature and the PES literature. Existing two-sided market research has focused on industries such as payment cards, online auctions, telecommunications, and operating systems. Identifying the US public labor exchange as another possible two-sided market expands the reach of this discipline not only into the realm of the labor market, but also into the domain of public policy.

This research also contributes to the ongoing evaluation of the PES and its role in the US labor market. While at times PES researchers and implementers have identified particular employer behavior patterns, this research provides a theoretical framework to better understand that behavior as the manifestation of indirect network externalities on a two-sided platform.

8.2 Recommendations for USES Policy

This research also implies policy recommendations for the USES and SESA. In particular, the importance of skills training to both job seekers and employers is especially relevant given the recent passage of WIOA in 2014. While much of the attention of this legislation is focused on job seekers and those who facilitate vocational training, the findings in this research suggest employers will greatly benefit as well.

What remains to be seen is how well the SESA will exploit these indirect network externalities or more importantly, allow the public to internalize these externalities. WIOA presents an unprecedented opportunity for SESA to partner with vocational training providers in developing the skills of the workforce. Not only will this engage job seekers and upgrade their skills, but it also could present a new opportunity for SESA to

reengage with employers eager to find the most qualified workers.

The findings of this paper would propose a continued, balanced implementation of the three-tiered approach implemented as part of the ES Revitalization Plan of the 1990s.

Tier I provides information services at a low marginal cost and proves to be a factor which encourages job seeker participation with the US workforce system. In a similar fashion, services provided by Tiers II and III, specifically skills training, provide benefits to both employers and job seekers and encourage the participation of both groups in the US workforce system. However, unlike the information services provided in Tier I, the benefits of training to both employers and job seekers can be demonstrated in UDES administrative data as far back as the launch of the modern USES system following World War II.

Unfortunately, SESA have operated for decades without the awareness they appear to serve two-sided markets. Decisions regarding the funding and prioritization of services on one side of the market have taken place without the knowledge the other side of the market is affected as well. It would be easy for SESA to justify reduction in services, placing undue emphasis on Tier I activities based on a lack of employer participation when in fact employer participation is actually lessened because of SESA reduction of services to job seekers.

In short, employers will participate if they find job seekers who are qualified. Policymakers can exploit these indirect network externalities through various subsidies which ensure ongoing employer and job seeker participation across the business cycle.

Furthermore, these subsidies can be strategically applied to optimize SESA transaction volume and subsequently, enable the USES to fulfill its mission to make the US labor market more efficient.

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