

MEASURING EMPLOYMENT OF NEW BUSINESSES IN THE CURRENT EMPLOYMENT STATISTICS SURVEY

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1. INTRODUCTION

This paper addresses issues in estimating business birth employment in the Bureau of Labor Statistics' (BLS) Current Employment Statistics Survey (CES) of employment, hours, and earnings. Previously conducted business birth and job generation studies have provided an indication of the importance of measuring employment in new businesses. Results from a number of these studies are compared here. The estimation of birth employment in the CES is discussed, along with the results from a birth study conducted in Florida by BLS in cooperation with the Florida Employment Security Agency. In this study, characteristics of new unemployment insurance (UI) accounts were analyzed. The effect of the characteristics on the estimation of birth employment was determined. Based on the results of the Florida study, a joint BLS/New York State birth survey is currently being conducted that attempts to identify births using New York's UI file and collect birth employment data that can be incorporated into the CES. The objectives and design of the survey are described in this paper. Both the Florida and New York studies are part of the ongoing CES modernization which is examining a wide range of survey design issues, including sample frame coverage.

The birth of new businesses is a primary source of jobs at the national, state, and local levels. There are roughly eight hundred thousand businesses formed each year, creating two and a half million new jobs. Compare this to total U.S. nonagricultural payroll employment of 99.5 million in March 1986 and a net employment increase of 4.5 million from 1984 to 1985 and 2.5 million from 1985 to 1986. While constituting only a small fraction of total employment, business births account for a substantial portion of net new jobs. Accurate estimation of business birth employment is vital in planning and evaluating economic policies since governments at all three levels have job creation programs underpinning their economic growth objectives.

Recent research into job generation conducted by several investigators has hinted at business birth's impact on employment growth. At M.I.T. (Birch 1979), analysis of Dun and Bradstreet credit rating information showed that small businesses (twenty or less employees) accounted for two-thirds of net new jobs between 1969 and 1976. In this same period, young firms (less than

five years old) contributed eighty percent of all replacement jobs. These results were confirmed in a Brookings Institute study (Armington and Odle 1981) utilizing files developed by the Small Business Administration which found that fifty-five percent of net employment growth between 1978 and 1980 came from small businesses. Also, a University of California study of California employers between 1975 and 1979 (Teitz, Glasmeier, and Svensson 1981) found that fifty-six percent of the state's net employment growth was generated by small businesses. These reports also pointed out the volatile employment of small, young businesses. Since new businesses are young and almost all have less than twenty employees, it seems reasonable to assume that new businesses are an important generator of employment.

More directly, a report on Kansas' business births and deaths between 1972 and 1977 (Kansas 1980) showed that over these years births generated 60 percent of the new jobs, 88 percent of the net employment increase, and at the end of 1977 accounted for 17 percent of total Kansas employment. A study of Michigan's economic base between 1978 and 1983 (Connor, Heeringa, and Jackson 1985) found that births generated half of the new jobs in business and financial services. It also noted that birth activity varied greatly across industries. The data bases for the Kansas and Michigan reports were the states' UI file. These, along with the other states' UI files, are used as the sampling frame for the CES.

Each of these studies had difficulties in identifying and quantifying business births since they were based on administrative records and business firms were not directly contacted to determine if they were actually births. Evidence from direct contact birth-oriented studies is needed to determine the employment impact of business births.

2. CURRENT EMPLOYMENT STATISTICS SURVEY (CES)

The CES is a monthly survey of over 250,000 nonagricultural business establishments conducted by BLS in cooperation with the Employment Security Agencies in the fifty states, District of Columbia, and Puerto Rico. In general, five data items are collected using a mail shuttle form: total employment, women worker employment, and either production worker or nonsupervisory worker employment, hours, and earnings.

Estimates for the nation and specific industries are published on the first Friday following the survey month. The survey is used to estimate monthly employment change, with employment level determined from an annual census. In the census, the March employment from all establishments on each states' UI file is summarized to the county, state, and national level and published in June of the following year. This employment level, or benchmark, is used to revise previous survey estimates and is the starting point for estimates following the benchmark month.

The 15 month benchmark processing schedule from March to June contributes to the delay in introducing birth employment into the survey estimates. Another delay occurs in identifying business births and adding them to the sampling frame (the UI file). On the average, there is a four month delay from when a business first hires employees until it is assigned a UI account number and is available for sampling. An additional delay is caused by the use of the link relative estimation technique in which a sampled unit must respond in two consecutive months before its data is used in preparing CES estimates. As a result, the survey does not collect data showing an employment change from zero, but rather the employment change of a six month old business. Birth employment is subsequently undercounted in the survey and the survey estimates must be revised to agree with the benchmark.

A bias adjustment procedure is used each month to adjust the survey's employment estimates for all sources of error, including the birth undercount. The basic assumption of the procedure is that current survey error can be approximated by previous survey error. The differences between March survey estimates and benchmark estimates for the past three years are averaged and used to produce the monthly bias adjustment factor. This technique using historical data is not always a good predictor of current survey error, especially at turning points in the economy.

A change in bias factor methodology was made in 1984 to take advantage of more current survey data. Research showed that bias was correlated with employment change and sample coverage. A regression model was developed for each industry using data from finer sub-industries. The three year average bias is regressed on the percent unit sample coverage for the most recent year and the employment change over the previous three years. The three year average bias, BIAS3, is estimated from the model. Using the percent coverage and employment change from the previous calendar quarter, a current bias, BIASC, is estimated using the same model and coefficients. The difference, BIASC-

BIAS3, is added to the three year average bias factor to produce the bias factor for the next quarter. Thus, if employment increased at a faster rate during the previous quarter than in the previous three years, the bias adjustment factor used in the current quarter is increased. This new methodology has decreased the magnitude of the annual benchmark revision. Nonetheless, based on the March 1984 benchmark the February 1985 total nonagricultural employment estimate was revised upward by 420,000 employees. When the March 1985 benchmark became available, the February 1986 estimate was revised downward by 227,000 employees, a decrease in the magnitude of the revision but a change in the direction from a year earlier.

The current set of research studies are directed towards establishing a methodology for the direct survey measurement of birth employment, thus minimizing the reliance on modeling methods which utilize past trends to estimate employment adjustments. The first step in the measurement process is the establishment of an exact and practical definition of "business birth."

3. IDENTIFYING BUSINESS BIRTHS

The term "business birth" has a wide range of interpretations. Here, two birth definitions will be given, the first from an economic standpoint, and the second, a more refined interpretation that is tailored to the CES program and the survey of new businesses. Both definitions refer to business births in a state but could be modified to refer to a local area or the nation as a whole. Generally, economic analysts and policy makers are interested in the new jobs created by new businesses. In an economic sense, a birth is a business establishment, previously nonexistent in the state, that is created and hires new employees. This includes branches and immigrations, but excludes takeovers, mergers, and other changes of ownership. From the perspective of the CES, births should consist of all establishments not covered in the most recent benchmark and the birth survey must be able to determine this. The applied definition is: a business establishment, previously nonexistent in the state, that is created, hires new employees, and is not a successor to any previously or currently existing business in the state. In the UI system a successor is a business that assumes the unemployment insurance liability of a previous business, such as when a firm incorporates.

Branches of out-of-state firms and immigrations are considered births from both the economic and CES standpoint. Branches of in-state firms are also economic births but, in the CES, branch

employment is usually covered in the employment reported by the main office. However, some branches may be assigned individual UI account numbers and report individually to the UI and CES. Ownership changes and incorporations occur frequently, and although the business is a new legal entity, it is almost always producing the same product or service, at the same location, with little or no employment change, and is not considered a birth either economically or in the CES. Basically, a CES birth is a new business not related to any other businesses in the state.

The research presented here centers on identifying business births from the CES perspective among the new employers on a state's UI file. The UI file is a state maintained data bank containing UI tax information on all employers covered by the state's UI laws and the Unemployment Compensation for Federal Employees program. Nationally, this includes 97 percent of all wage and salary earners. Each state has its own UI laws concerning who must pay taxes and its own system for processing and maintaining its UI file. As a rule, each covered employer in a state is assigned a unique UI account number and is required to pay a tax into the account at the end of every calendar quarter. The tax paid is a function of firm employment, industry, and unemployment history. The state has a variety of sources that enable it to discover new employers that should be paying taxes. The most direct method is when the employer completes the state form to determine tax liability. This form collects information on employment, primary product or service, when the business began, and whether it is a successor. Sometimes a business simply sends in a quarterly tax report and its contribution. Other sources include the Secretary of State's office which monitors incorporations, the State Tax Commission which collects individual and corporate income taxes, the Social Security Administration which documents all employers with a Federal Employer Identification Number, and the IRS. Occasionally, an employer is discovered when a laid-off worker files a benefit claim. Finally, the state has local field agents tracking business births.

The state attempts to get all new employers to complete a tax liability form. Once the completed form is received by the state it is reviewed to determine if the employer is liable for UI taxes and a Standard Industrial Classification (SIC) code is assigned based on the primary product/service description. For some businesses, the assignment of the SIC code is delayed because of an incomplete description and the business must be recontacted by mail or phone. The employer is then given a UI account number and billed for any back

taxes.

4. FLORIDA NEW UI ACCOUNT CHARACTERISTICS PROJECT

Characteristics of new UI accounts in Florida were recently studied in a BLS project. The purpose of the study was to determine how many of the new accounts satisfied the CES birth definition, the reasons for not meeting the birth criteria, the accuracy of the information known at the time the account was assigned, and the length of time from when a business began until it entered the UI file. The study also looked at the employment and industry distribution of new businesses. The data base included all UI accounts assigned by Florida in February, March, and April 1984. Data items on the file included SIC code, predecessor and successor account numbers, effective date, and route sheet date. The effective date is the date the employer became liable for UI coverage. The route sheet date indicates the date the information was added to the file. The employment of the new accounts between October 1983 and December 1984 was constructed from another Florida file based on quarterly tax reports.

There were 12,983 UI account numbers assigned by Florida during the three month period. 12,165 of these were classified by the state as new accounts, the remainder were classified "inactive to active", that is, a previously existing business is assigned a new account number. The analysis considers only the new accounts, the "inactive to active" accounts do not meet the birth criteria. Of the new accounts, 9,650 did not have predecessors and 2,515 did. Having a predecessor means that an account is a successor to a previously existing account and is therefore not a birth. After deleting duplicate accounts assigned to some firms and establishments that weren't liable for UI taxes, there were 9,645 new accounts without predecessors and 2,305 accounts with predecessors.

For this study, if an account had a predecessor it was not considered a birth since it was assumed to be already on the census frame. Updates made to the accounts through November 1984 were examined to determine the number of predecessor errors made at the time the accounts were assigned. Only two percent of the accounts initially assigned without predecessors (births) were later found to have predecessors (not births). In the opposite direction, at most one percent of the accounts were wrongly assigned predecessors when they should not have been. The time necessary for the state to determine the predecessor errors was generally short, with a median of 41 days. Judging from the

distribution of the correction time, very few predecessors errors would be discovered after November.

The updates were also examined to identify changes in the initial SIC code assignment. Three percent of the accounts underwent an SIC change. Nearly half of the changes were from SIC 9999 (Unclassified) to a more specific code. Of the other changes, eighty percent were at the one or two digit level. The median lagtime for an SIC 9999 change was 25 days, for other changes, 35 days.

The use of the UI file as an up-to-date list of new businesses is limited by the time delay from when a business first hires employees until it enters the UI file. The length of time from when a business becomes liable for UI coverage (effective date) until it enters the UI file can be calculated from the data. Based on the liability requirements, the effective date differs from the actual birth date by an average of two weeks. The length of time from when a business becomes liable until it enters the UI file is partially determined by the source through which the state discovers the employer and whether the employer has a predecessor. Figure 1, below, shows that employers filing a tax liability application had the shortest median lagtime, 87 days. When information had to be clarified the median lagtime was slightly longer, 92 days. The field staff discovered employers after a median of 125 days. Employers filing a quarterly tax report entered the UI file after 130 days. Irregular tax reports needing clarification required 141 days. The remaining sources were not as efficient, ranging from 205 days using the Federal IRS tax tape to 401 days for benefit claim filings. Overall, the median lagtime was 120 days. In each source category and overall, businesses with predecessors were discovered more quickly than those without.

Figure 1.-- Percentage of New UI Accounts and Median Lagtime by Source

Source	Percent of New UI Accounts		Lag-time Days
	Birth	Non-Birth	
Tax liability application	34	45	87
Followup clarification	1	0	92
Field staff discovery	11	21	125
Quarterly tax report	47	10	130
Irregular tax report	3	22	141
Federal IRS taxpayers	1	(1)	205
Federal IRS tax followup	(1)	0	350
Benefit claim	3	1	401
Other	(1)	0	416
Total	100	100	120

(1) Less than 0.5 percent

The percent breakout of source also reveals UI knowledge differences between births and nonbirths. The correct procedure, filing a tax liability application, was followed by 34 percent of the births and 45 percent of the nonbirths. Nearly half of all births were discovered after filing a regular quarterly tax report, compared to only 10 percent of the non-births. 21 percent of non-births were discovered by the field staff and 22 percent had irregular reports. In contrast, 11 percent of births were discovered by the field staff and only 3 percent had irregular reports. Births are less likely to follow the correct tax application procedure, are less visible to the field staff, but are less likely to have irregular reports.

Based on the employment reported by the employers each quarter, the employment of the new businesses remained stable between November 1983 and December 1984. Businesses began with an average of between 3 and 3.5 employees, and average employment stayed within this range throughout 1984. A few of the births did have large employment gains.

Figure 2, below shows the industry distribution of the birth accounts. Nearly 80 percent of the births were in the service producing sector, led by the service industry, particularly business and health services, the retail trade industry, and finance, insurance, and real estate. Probably because of the season, there were a large number of construction births. Manufacturing births were divided equally between durable and nondurable goods, with the greatest number found in printing and publishing, apparel, and lumber products.

Figure 2.-- Industry Distribution of Florida Births

Industry	Number of Accounts
Mining	13
Construction	1530
Manufacturing	344
Transportation and Public Utilities	359
Wholesale Trade	847
Retail Trade	2250
Finance, Insurance, and Real Estate	1075
Services	3227
Total	9645

A sample of 111 businesses assigned new account numbers with predecessors were asked to explain their relationship with the predecessor business. The results are presented on the next page.

Figure 3.-- Relationship Between New UI Accounts and Predecessors

Type of Change	Number of Accounts
Incorporation	35
Takeover, same SIC	31
Takeover, SIC change	11
Name change only	8
Partnership change	7
Leasing arrangement	2
Branch office	2
Reorganization	2
Unable to determine	13
Total	111

Only the establishment of a branch office is a change that generates new employment and this occurs only twice among the 98 usable responses. A purchase or takeover that involves an SIC change could affect the CES employment estimates in the old and new SIC cells. The remaining changes involve ownership and legal status changes and are not considered births.

In summary, the most important characteristics influencing the identification of business births are the lagtime from when a business first hires employees until it is assigned a UI account number, and the assignment of predecessor codes. The state has a variety of sources through which it discovers new businesses. The shortest median lagtime for any source is about three months, with an overall median lagtime of four months. Only about five percent of the new businesses were assigned UI accounts within one month of first hiring employees. Almost twenty percent of the accounts were assigned predecessors. The accuracy of predecessor code assignment in Florida appears to be good, with only two percent of the assignments in error. However, it has been indicated that in other states a large portion of the accounts that should have predecessors are not initially assigned them and are mistaken for births. It is necessary to contact these businesses to determine if they meet the birth criteria, as well as to collect birth employment data.

5. NEW YORK STATE BUSINESS BIRTH STUDY

To continue and expand the research conducted in Florida, BLS and New York State are conducting a yearlong survey of businesses assigned new UI accounts by the state. New York was chosen because it is geographically and economically different from Florida, it contains a substantial portion of the national economy, and the State Department of Labor has constructed a file containing information about business births and deaths occurring since the beginning of 1976. The objectives of the study are to determine a methodology for measuring

employment of new businesses using the UI system and to construct a new procedure for estimating the employment of new businesses still not covered by this methodology. Characteristics of the new UI accounts will be studied using the historical birth/death file. The characteristics may indicate problems affecting estimation of birth employment that were not significant or not found in Florida.

The need for a survey of new UI accounts is twofold. First, new UI accounts are assigned to nonbirths as well as births. In New York, studies of the historical birth/death file have shown that nonbirths constitute a sizable fraction, about 20 percent, of new UI accounts. Also, new businesses may be assigned more than one account number, either because of purposeful procedures or errors in the UI system. Results of the survey will be used to estimate the amount of frame overlap between the CES and birth surveys, as well as determine the reasons for assigning new UI accounts to nonbirths. Second, in the CES, birth employment is not measured because of the lagtime in sampling new businesses and the estimation technique. The survey will collect monthly employment data for births that will provide a more accurate estimate of monthly employment change in New York State.

A systematic sample, stratified by employment and containing about 200 businesses, will be selected at the beginning of each month from the approximately 3,000 new UI accounts assigned in the previous month. Using a computer assisted telephone interviewing (CATI) questionnaire, sampled units will be asked to verify UI information, explain any relationship to a previously or currently existing business, describe their primary product or service, and for units determined to be births, report their employment in both the month they first hired employees and in the current month. Births will be determined by first asking whether the sampled business is related to any other business through branching, incorporation, sale, merger, or partnership change. In-state and out-of-state branching will be determined. If there is such a relationship, sampled businesses will be asked if the predecessor had employment. If there was a predecessor with no employment, or no in-state predecessor, the business will be considered a birth. Otherwise, the business is not a birth since the CES would maintain the business as the same unit as the predecessor for survey and census estimates.

Since the goal of the survey is to estimate birth employment for the month prior to the survey month, this methodology is limited by the fact that only about 5 percent of the businesses born in the prior month will have been

assigned a new UI account number by the beginning of the survey month. This percentage probably varies by month due to UI staff resources and the sources through which new businesses are found by the UI system. To overcome this drawback, the historical birth/death file will be used to develop a model that predicts current birth employment from birth employment generated over the previous six months. The seasonality of New York births, which usually peaks in the first quarter of the year and steadily declines throughout the remaining three quarters, will be incorporated into the model.

6. CONCLUSION

The goal of birth research being conducted by BLS is to improve estimates of monthly employment change and to reduce benchmark revisions in the Current Employment Statistics Survey. Research is now focused on using the CES sampling frame (UI file) more efficiently to identify births and introduce their employment into the survey estimates. A study of Florida new UI accounts indicated the feasibility of using the UI file for this purpose although some limitations were discovered. In New York, a birth survey is being conducted to identify births and collect their monthly employment data. A methodology to overcome UI limitations is being developed with the aid of the state's historical birth/death file. Relative to current survey procedures, monthly employment change estimates should be improved because the birth survey captures the employment change from zero employees. Benchmark revisions should be reduced because a model based on more recent birth data will be available for use directly in estimation or as a separate birth adjustment procedure.

Other sources of birth information

will be looked at in the future, including new telephone listings and Federal Employer Identification Number assignment. The feasibility of area sampling will also be studied since it may provide more timely and accurate birth estimates. Research will also be conducted on methodology for utilizing birth data in the CES estimation procedures.

REFERENCES

ARMINGTON, CATHERINE, and ODLE, MARJORIE (1981), "Sources of Employment Growth 1978-1980," mimeo, Business Microdata Project, The Brookings Institution.

BIRCH, DAVID L. (1979), "The Job Generation Process," mimeo, M.I.T. Program on Neighborhood and Regional Change, Massachusetts Institute of Technology.

CONNOR, J., HEERINGA, S., and JACKSON, J.E. (1985), "Measuring and Understanding Economic Change in Michigan," mimeo, Institute for Social Research, University of Michigan.

KANSAS DEPARTMENT OF HUMAN RESOURCES (1980), "Kansas Business Births and Deaths 1972-1977," Report Series No. 21, Research and Analysis Section, Division of Staff Services.

NEW YORK STATE DEPARTMENT OF LABOR (1982), "Some Aspects of Business Births and Deaths in New York State from January 1, 1976 Through March 31, 1982," Departmental Research Memorandum No. 3, Division of Research and Statistics.

TEITZ, M., GLASMEIER, A., and SVENSSON, D. (1981), "Small Business and Employment Growth in California," Working Paper No. 348, Institute of Urban and Regional Development, University of California, Berkeley.