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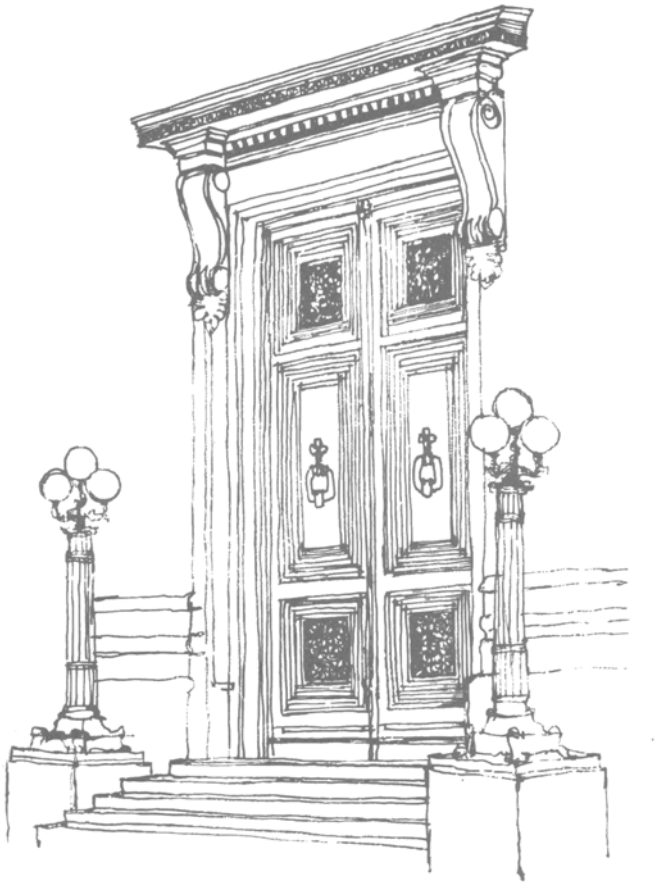

Report and Recommendations on Two Chilean Labor Force Surveys

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REPORT AND RECOMMENDATIONS ON TWO CHILEAN LABOR FORCE SURVEYS

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Resumen

Por muchos años, Chile ha dispuesto de dos encuestas al mercado laboral para la zona del Gran Santiago. Una de ellas es la que realiza la Universidad de Chile desde los años cincuenta; la otra es la aplicada por el Instituto Nacional de Estadísticas (INE) a nivel nacional, que también tiene datos para la Región Metropolitana. Los resultados de ambas, en especial la tasa de desempleo, no siempre coinciden, situación que ha ocurrido en particular en todos los años desde 1998. Este estudio analiza esta divergencia entre ambas encuestas, identifica varias áreas que podrían explicarla y recomienda algunas acciones para mejorar la operación de las mismas. El estudio encontró que ambas encuestas cumplen adecuadamente con las recomendaciones de la Organización Internacional del Trabajo en lo que se refiere a la medición del empleo y el desempleo.

Dos áreas significativas del informe se refieren a los cuestionarios que se utilizan en las encuestas, y a las técnicas de estimación de datos. Se presentan catorce recomendaciones para mejorar las encuestas, con particular atención en los planes del INE de renovar totalmente su cuestionario en una fecha cercana. Con respecto a la encuesta de la Universidad de Chile, se proponen modificaciones al cuestionario básico y procedimientos de ponderación de los datos. A la vez se recomienda mejorar el análisis de la información (INE), mantener perfiles de error en la recolección de datos (ambas encuestas), y ajustar el análisis estadístico por estacionalidad (ambas encuestas).

Abstract

For many years, Chile has benefited from two surveys of labor force developments for the "Greater Santiago Area." One of these surveys dates back to the 1950s and is conducted by the University of Chile. The other is a national survey, conducted by the National Institute of Statistics (NIS), from which data are also available for the Santiago Metropolitan Area. Results, especially the rate of unemployment, do not always coincide, and this has been particularly the case for all years since 1998. This report studies this problem of non-

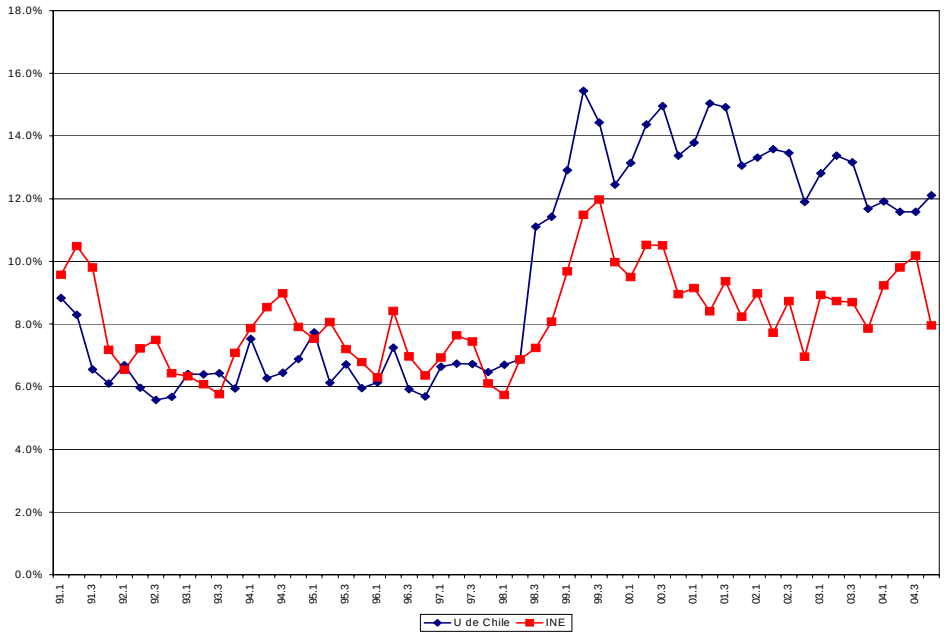
concurrence, identifies a number of areas for possible explanation, and makes recommendations for improvement of survey operations. Both surveys were found to follow quite well recommendations of the International Labor Organization regarding the measurement of employment and unemployment.

Two significant areas in the report concern the questionnaires used for the surveys and data estimation techniques. Fourteen recommendations for improvements in the surveys are offered, with major attention focused on plans by the NIS to introduce an entirely new questionnaire in the near future. With respect to the University's survey, the authors recommend changes in the basic questionnaire and survey weighting procedures. They also recommend improving data analysis (NIS), maintaining error profiles for data collection (both surveys), and using seasonal adjustment for statistical analysis (both).

Introduction

In a contract with the undersigned consultants from the United States, the Central Bank of Chile has requested an extensive examination of two labor force surveys conducted in Chile. One survey covers the "greater Santiago area" and is conducted by the University of Chile; we refer to this throughout the paper as the UChile survey. The other survey covers the entire country but also has data for the Santiago area and is conducted by the National Institute of Statistics, referred to herein as INE. The issue that we have been asked to examine concerns the fact that the labor force data for Santiago from these two surveys – which one might expect to be largely in agreement – frequently are not (in agreement), especially for measures of unemployment during slack economic periods.

Figure 1. Rates of unemployment
(INE: Metropolitan Region; University of Chile: Greater Santiago)



This is not a new issue or problem in Chilean labor force history – actually, Santiago history – but rather one that has surfaced fairly frequently over the years. However, it has been particularly evident beginning in 1998 and continuing up to the present, whereas, in the past, it would arise during recessions and then disappear fairly quickly during recovery phases. (See figure 1.) The disappearance of differences, particularly in reported unemployment rates, has not been the case over the last seven years, though there have been variations in differences in recent years. This problem, while therefore always known, has apparently been exacerbated by publicity in several arenas, such as media reporting and the political scene, causing legitimate concern as to what is the "true" measure of unemployment. The fact that the two surveys are not identical technically is either not known or appreciated or both.

Sources of information

During our tenure here, we met with numerous people from within the Central Bank, the National Institute of Statistics, and the University of Chile, as well as knowledgeable people from outside, that is, academics. We also were provided with and perused many documents that described the two surveys in detail, that critiqued the surveys and data differences, and that described labor force trends in Chile and Santiago. Even given that access to a significant amount of information and having benefited from re-visits with the two major survey organizations, we nonetheless must confess that our knowledge is not as optimal as we would prefer. We did attempt, of course, to obtain as many answers to our questions as possible and, therefore, to learn as much as we could about the concepts and measurement techniques. (At times, it seemed as if the more we learned, the more additional questions arose.) However, though we might well be considered experts in this general area, our expertise relates to our backgrounds in the labor force survey of the United States and our knowledge about best practices internationally. All of that does **not** make us experts in Chilean labor force survey practices or the needs and interests of Chile. We trust interested readers will appreciate this.

Why are there differences between the two measures of unemployment?

In attempting to answer this question, it must be recognized that any two surveys, even measuring the same phenomena with the same questions and utilizing the same survey techniques, can be expected to produce different results in the short run, especially if the samples are relatively small. But over time, such differences will, of course, tend to converge. In the Chilean situation, we cannot make this case. The two surveys do, in fact, differ: While measuring essentially the same phenomena for Santiago, they do not use the same questions, nor do they have quite the same conceptual framework, and there are differences in sampling and data estimation. As a consequence, one ought to expect differences in data results as well, both in the short run and over time. We will examine each of the areas of difference in this section of the paper.

1. Concepts and questionnaires

International standards as promulgated by the International Labor Organization (ILO) in its October 1982 "Resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the Thirteenth Conference of Labour Statisticians" (Resolution 170) for measuring employment and unemployment – and therefore the labor force – are quite explicit.

In general, to be counted in a survey as employed – and it is important to recognize that a conceptual framework is only relevant in a survey context – a person must have actually worked during the reference week for pay or profit, for as little as one hour or more, or have a job from which they are temporarily absent (such as vacation, illness, strike, etc.).

(*Nota bene*: The one hour or more standard should not be the cause for concern, as very few persons actually are found in surveys to work a very few, such as one or two, hours; the real issue is that this yields objectivity to the measurement process. It would be subjective if countries chose arbitrary points, such as a minimum of 5, 10, or 15 hours.) Additionally, the ILO guidelines provide that persons working without pay in family farms or businesses are to be counted as employed, irrespective of the number of hours they work, although many, perhaps most, countries apply a lower limit, l5 being the lower limit adopted by the INE for Chile's statistics, which many other countries, including the United States, utilize as well. (The ILO conceptual basis for employment is covered in paragraph 9 of the October 1982 resolution.)

To be counted as unemployed, therefore, a person must not have worked at all – or have had a job – during the reference week and have actually looked for work sometime in the recent past, such as the past month or two (currently, past two months in Chile – this will change to past month in 2006 or 2007 for INE). "Looking for work" must involve taking some specific steps to find a job, such as going directly to employers, answering newspaper ads, visiting public or private employment agencies, etc. In addition, they must be available to take a job "last week," if one had been offered. Any jobless persons who have made arrangements to take a job some time in the future should also be considered as unemployed. And lastly, persons on "layoff" from a job with no expectation of recall, if they otherwise meet the requirements of availability for work and seeking work are to be counted as unemployed. (The ILO conceptual basis for unemployment is covered in paragraph 10 of the October 1982 resolution.)

All other persons, that is, those without jobs and those not looking for them, are considered to be "not in the labor force." This last category can, and often does, include persons considered "discouraged" from seeking work, who are often measured specifically in national surveys. ("Not in labor force," or the population not economically active, is covered in paragraphs 11, 12, and 13 of ILO's October 1982 resolution.)

Regarding the ILO and its standards for measuring the economically active population – the labor force – it is important to recognize that the standards are set through meetings of international statisticians that occur approximately every five years. Indeed, one of us (Bregger) attended these meetings in 1987 and 1992 (if memory serves). In any case, apparently there have been no changes conceptually over the years, even including the issue of minimum hours of unpaid workers in a family farm or business. It is possible that statisticians in meetings subsequent to 1992 took up such issues as best practices for labor force questionnaires, particularly after the United States introduced sweeping changes in its questionnaire – going from a total of some 47 questions to 128 (or more) questions currently – and introducing the computer into total data collection, through the use of laptops and collection via centralized data collection facilities. (One must recognize that individual respondents get comparatively few of these questions; the large number enables surveyors to have better "skip patterns" and thus more accurate information from respondents.) It is likely that Chile's National Institute of Statistics has had delegates to

these meetings of International Statisticians and can produce for local interest information regarding outcomes of more recent ILO conferences.

What about Chile in this regard? As reflected in the INE survey, these concepts are followed fairly explicitly through the "National Employment Survey." There is one exception, however. At present, the so-called "availability test" to take a job, within unemployment, is not asked; we now know that this will be resolved beginning in 2006 or 2007, and we will cover the planned changes in a later section of the paper. Therefore, we can say that INE is generally following international standards with regard to labor force concepts.

We would add that following international standards with respect to the conceptual aspects of a survey does not mean that we think that the present INE questions are optimal. Indeed, we believe that there is considerable room for improvement of the questionnaire. The first question is awkward, as has been learned in other countries, including the United States. It is: "Which of these situations describes where you were most of LAST WEEK?" (see Appendix I) and is followed by several options to be read, the first being "at work" and the second "with job, but not working." We think that the opening question for the UChile questionnaire – "Did you have a remunerated (**paid**) job during the week?" (see Appendix II) – is a better question and thus a much-preferred way to open a labor force survey. INE will begin using that form (in either 2006 or 2007) for its initial survey question, as well – "Last week, … did you have a job, business or other activity for which you received (or will receive) a payment, whether in cash or in kind?" – which we think is an excellent idea.

The UChile survey for Santiago also adheres to the ILO conceptual framework. It is possible that the survey may miss some otherwise employed persons by not asking an explicit question about more marginal work situations, as provided for under ILO's October 1982 resolution. In other words, after asking if the respondent worked for pay (last week) and s/he responds "no," there should be another question to determine if that individual might still might have a job. We understand that the University is satisfied with this limit of one basic question, because marginally employed persons could be closer to being unemployed, in reality – a valid position to take – but this is one basis for data differences across the surveys. Also, while a question is asked about reasons for absence from work, the precise questions used are not explicitly on the survey form and thus could vary significantly across interviewers (though they are well trained before going out on interviews). It is never a good idea in surveys to collect pertinent information without the necessary questions actually included in the questionnaire document itself.

Also, while there is a provision in the questionnaire for identifying unpaid workers, one must assume that this refers to persons working in a <u>family business</u>, and that could be an incorrect assumption in some, if not many, cases. There <u>is</u> the provision for responses of performing unpaid work, but this appears as a potential answer under the **unemployment** question – "Did you look for work during the week?" – and does not allow for the determination of whether it relates to a family business or just, perhaps, some volunteer work – such as a non-profit organization and thus not eligible for being included among

employed counts. Thus, if working any number of hours of unremunerated work, the person would be employed. Since the ILO standards do not specify a minimum number of hours for unpaid family work, the University's 1 hour or more standard implies the identification of more unpaid family worker employment than INE's 15 or more lower limit, and, of course, they may be including some other sorts of volunteer workers. Both possibilities would imply more employed persons than INE, though we have no idea of the magnitudes, which could well be comparatively minimal. We do believe that the University needs to take a close look at the entire issue of unpaid work.

We would like to make one additional observation concerning UChile's "unpaid worker" identification. As we have pointed out and as seen in the questionnaire itself (Appendix II), where this occurs, it means that some respondents (possibly just a few) can be classified as "employed" via three separate areas in the "unemployed" portion of the questionnaire. This does tend to violate ILO standards, as well as international best practices, because these standards anticipate that, through surveys, a respondent must be determined to be employed, that is, to have a job, through a series of questions, and, if not, then is asked about seeking a job. Therefore, to identify a respondent as employed in questions concerning unemployment would, in our opinion, violate these standards.

At this juncture, it might be useful to indicate exactly what sorts of questions are missing from the UChile questionnaire that might bring out some missing employment – and thus also lessen, perhaps, the unemployed counts as well. In the 5a and 5b area on the form (again, see Appendix II), after a respondent has replied "no" to the question, "Did you have a remunerated (paid) job during the week?", the following questions could be considered:

1. Did you do any work at all last week for pay, even for as much as one hour? (Yes or no – if yes, go to questions 6, etc.)

2. (If "no" in 1) Do you or a member of your family operate your own farm or business? (Yes or no – if "yes," which person operates the business? _____ If "no," go to 5c,d, e questions.)

3. (If there is a family business and respondent is not the business owner/operator in 2) Did you work in that business during the past week? (Yes or no – if "yes," go to questions 6, etc. If "no," go to 5c,d,e questions.)

As stated above, adding these questions could well change the results in the UChile survey for employment (more) and unemployment (less). It should also be recognized that this would eliminate the need for the more ambiguous appearance of responses relating to "works with no remuneration."

Explicit questions in the "unemployed" area are also missing from the questionnaire form, and thus interviewers – typically first-timers in the survey – must ask on their own about the reason why people are not looking for work but would have accepted a job (question numbers 5d and 5e). The UChile survey does have a requirement to ask about specific

activity of job search but does not provide any specific categories for the different types of acceptable search methods, i.e., going directly to an employer, using a public or private job service, answering newspaper advertisements, etc. Also, given that there is no allowance for job search beyond the previous week, persons awaiting answers to prior search inquiries – such as responses from applications to employers – may not be counted as unemployed who should be. This would not seem very likely, given that UChile unemployment figures already tend to be higher than INE figures. But this is yet another difference of a definitional nature between the two surveys. Lastly, there is no "availability test" for the unemployed, which, as we have seen, is part of the ILO convention, but at least UChile and INE are consistent is this "non-compliance" regard. Both surveys could therefore overstate unemployment slightly owing to this, to the extent that some otherwise unemployed persons could not take a job in the reference period if one had been offered.

There is one further difference between the two surveys: age coverage. ILO standards do not specify age limits specifically, either at the lower or the upper end, and countries do, in fact, differ in this regard. In Chile, there is a difference within the country itself, with INE using the age delineation for labor force activity of 15 years and over – a common practice throughout the world – whereas UChile has a 14+ standard. Whether or not this is important depends on the extent to which Chilean 14-year-olds are active in the labor force, and we understand that they are not very active. It is generally understood that youth have the highest unemployment rates in most, if not all, countries and, thus, *ceteris paribus*, UChile unemployment rates for Santiago could be a bit higher than INE rates for this reason alone. It follows that, in business downturns, 14-year-olds can be expected to have an increased incidence of unemployment, therefore adding to a discrepancy in unemployment rates. In the very excellent 1999 paper by Bravo, Ramos, and Urzua, "Differences in Unemployment: INE – U. De Chile," this issue appears to be bypassed by adjusting the UChile data by removing 14-year-olds. To us, their adjustment evades the current data comparison problem, in that, unless the UChile unemployment rate (and all other labor force) data are routinely published on a 15+ basis (in addition to on a 14+ basis), small unemployment rate differences owing to age could continue to exist. We will revisit this issue in our section on recommendations.

The conclusion in terms of conceptual differences between the surveys is that both INE and UChile follow international standards fairly closely, with the exception relating to the "availability test" for unemployment missing in both and the problem with identifying employed persons in questions relating to unemployment for the UChile survey. They just do not follow them in precisely the same way, that is, in terms of their respective questionnaires.

Questionnaire wording is not changed with any great frequency in the two surveys. The last time for INE was in 1996, and, as was stated above, the UChile questionnaire has never been changed, since the inception of the survey in 1957. These are "good things," because, as is well recognized in survey data collection, even seemingly small, subtle changes in the wording and/or placement of questions, or the addition of questions, can produce data effects, sometimes of a significant nature. Ergo, if one wants consistency in measurements

over time, such as the incidences of employment (the employment-population ratio) and unemployment (the unemployment rate), it is highly desirable to maintain consistency in questionnaire order and content.

2. Survey descriptions

A. Target precision

Usually in planning for sample designs, sample sizes are determined by the desired target precision for the primary characteristics of interest (such as employment and unemployment by age and sex), budget considerations, or both. For the INE survey, the sample was designed to attain a coefficient of variation (CV) of 2 percent on a national unemployment rate of 8 percent. The INE sample size for the entire country is about 35,000 households, with data collected each quarter of the year over the entire quarter, that is, about $1/13^{th}$ of the 35,000 each week of the quarter. Sub-regionally, for the greater Santiago urban area, the sample size is about 3,200 households in each quarter. For the UChile survey, the sample was designed to attain a CV of 4.3 percent on an unemployment rate of 15 percent, and its sample size for greater Santiago is about 3,060 households. Since the stratification for both surveys is based on decennial census data (currently, the 1992 Census) and the sample sizes for Santiago are approximately equal, there is no reason to believe that there is a significant difference between the survey estimates based on this factor.

B. Survey collection period/reference period

Differences in the collection and reference period across surveys can often affect survey comparisons, though the nature and direction of the effects is usually difficult, if not impossible, to decipher. Therefore, we will describe these periods, leaving it to those more knowledgeable with Chilean seasonality and other time-period issues to conclude whether INE-UChile direct comparisons might be affected.

In the INE, data are collected on a continuous basis, week in and week out. In terms of quarters of the year, e.g., the first quarter, January - March, interviewers visit, as indicated above, roughly 1/13th of the 35,000 households, such that the data for that quarter is considered a moving average. Certainly all three months are reflected. For the UChile, data are collected in just four months of the year, March, June, September, and December; the specific week within these months is selected so as to be essentially equally distant between reference months and devoid of holidays. What is apparent, however, is that the time periods for quarterly data are **not** the same. Are the incidences of employment and unemployment different due to these data collection variations? We suspect so, especially given that the UChile survey has absolutely no coverage in eight of the twelve months of a year. How much and in what direction? Educated guesses are in order; we are unable to say. But the incidence of unemployment could be lower in the months not covered by UChile.

In both surveys, reference periods are roughly the same, that is, "last week." In INE, interviewers ask about last week in the subsequent week. In UChile, interviewing begins on a Saturday (mid-day), and questions are asked about the week just being completed (Sunday – Saturday). Therefore, one can sense little difference in this regard.

C. Geographic scope

The geographic scopes of the two surveys could have enough differences to account for the survey estimates being significantly different. Although the scope of the INE survey consists of the entire country of Chile, with the exception of a few inaccessible areas, the survey also provides sub-national data for 12 regions and the defined "Greater Santiago urban area." The UChile survey consists of Santiago, which is defined by 34 communities/boroughs. Since there is a very large overlap between the defined Greater Santiago urban area (INE) and Santiago (UChile), the comparatively small difference in geographic definitions – INE has parts of three districts not included in UChile – should not account for the significant differences between survey estimates.

D. Collection mode and type of respondent

For surveys, there may be different modes of data collection – personal interview, telephone interview, or mail. Personal-visit surveys usually have higher response rates than telephone surveys, and telephone surveys, in turn, higher response rates than mail surveys. The higher the response rates, there will, quite naturally, be less potential bias introduced into the estimates due to non-response.

For both the INE and UChile surveys, the collection mode is a personal visit. The type of respondent is the head(s) of the household (preferred) or other household members of sufficient age. For the UChile survey, the concentration of data collection on weekends and then evenings tend to enable more household heads to be interviewed than in INE. However, after non-response follow-up (a maximum of three for INE and three or as many as five for UChile), recent overall response (and, therefore, non-response) rates for both surveys are comparable – about 88 percent for the Santiago Metropolitan Region in INE and 86 percent for the Greater Santiago Area in UChile (taking vacancies and demolished dwellings into account). For both surveys, imputation is carried out for all non-responding dwellings.

E. Training for data collection, quality control, and survey workforce

For surveys, it is important in data collection that there be excellent training of interviewers and other survey staff for the collection and editing of the data, with both supervisory review and quality control procedures in place. Such training and review is essential in order to minimize non-sampling errors that may affect survey results. Both the INE and the

UChile have training manuals for interviewers and other survey staff, including supervisors, in place.

For both surveys, the supervisors normally review and edit the collection forms and note the types of errors being made by the interviewers. However, no formal system is in place to code such errors and tabulate them for feedback in the continual training of data collectors. We have a recommendation in the last section of our report in this regard.

Interviewers are rotated in such a way in both surveys that the same interviewer rarely visits the same household twice in a row. Also, both surveys have several re-interview procedures in place for detecting falsification of data and also possible respondent variance and bias. For INE, re-interview data are collected and a reconciliation is made, but we are uncertain whether there is a formal system in place to code and tabulate these data to improve the data collection process. UChile also has re-interview and reconciliation data available and has recently begun to digitize some of the data for possible subsequent tabulation.

Both surveys have formal processes for checking the coding and keying of data to transfer the interview paper data into the computer. For INE, the process includes the re-coding and re-keying of the data and a matching and reconciliation of the differences, resulting in the availability of error rates. For UChile, supervisors conduct a review of interviewer coding, and the computer produces consistency checks of the keyed data.

For the INE, usually older and more experienced workers (typically middle-aged women) are hired and trained as interviewers. They are permanent hires – i.e., there is a permanent interview staff – and we were informed that there is fairly limited turnover, which would tend to lend more stability to the survey. For the UChile survey, on the other hand, younger and less experienced workers, mostly students, are hired and trained as interviewers. These are, thus, temporary hires, and we were informed that there is considerably greater turnover of staff. Indeed, we understand that about 60 percent of interviewers in one survey round (say, March) are not involved in the survey in the next round (June). And, there are essentially no continuing interviewers beyond two years.

Both organizations claim that their data collection workforce is superior to the other, due to their training. Our own knowledge and experiences with U.S. practices and those of other survey organizations suggest that the INE practices are significantly better than those of UChile in this regard. But the University has referenced Chapter 8 in Dr. Robert Groves' book, Survey Errors and Survey Costs (1989), as well as other researchers. Dr. Groves discusses how the interviewer "design effect" with its interviewer intra-class correlation (rho) and the average workload size per interviewer (m) may affect the variances of survey estimates. Specifically, UChile suggests that its average workload of 38 interviews per interviewer (for a survey month) versus INE's average workload of 266 interviews per interviewer (for an entire quarter) has a much better/lower interviewer "design effect" on the variance of unemployment estimates. Therefore, the University suggests that its practice of having a larger well-trained workforce (for Santiago) is better in this regard. (At

this juncture, we must point out that the University erred greatly in its calculations regarding INE's workload calculation in one very important respect. Because they conduct interviews over the entire 13 weeks of each quarter of the year, the workload for an individual interviewer in INE is only about 21 households for a week, which is considerably less that UChile's 38 interviews per interviewer!)

Research in this area has been in existence for at least 20, maybe 30, years. The University may have a point; some survey characteristics do have significantly higher variance estimates due to the rho and m factors. But some characteristics do not. The estimates of this rho vary by characteristic and can be quite unstable. (Some have negative values, some have values close to zero, and some have a relatively wide range of values.) The increase of interviewers to lower the m factor would also lower this effect on the variance, but survey design cost efficiencies (e.g., training and supervision of interviewer costs) suggest that other research alternatives should be explored. Such alternatives include attempting to reduce the rho values to as close to zero as possible through better questionnaire design, better training and supervision of interviewers, computer-assisted interviewing, etc. Therefore, the UChile survey may indeed have an advantage with the m factor, but if the rho factor can be reduced to very near zero in INE, then that advantage is greatly reduced. Also, there remains the factor of the high turnover rate of the UChile workforce. While some data do not show any significant differences between an experienced, well-trained workforce (like INE) and an inexperienced, well-trained workforce (UChile), most survey organizations would prefer an experienced one to an inexperienced one. In any case, both survey organizations should formally develop and analyze any re-interview data and provide measures of "interview bias and variance" for their respective surveys. (See reference for Statistical Policy Working Paper 31, "Measuring and Reporting Sources of Error in Surveys, July 2001.")

F. Survey design

1) Sampling frame, coverage, and updates

The sampling frame is the list of all potential sampling units (typically, dwelling units or clusters of dwelling units) from which a sample is to be selected. Therefore, for a survey, it is important that the sampling frame provides complete coverage (the total of all sampling units) with respect to the desired geographic scope, e.g., Santiago. After a decennial census, in order to maintain this coverage over time (10 years), it is important to provide procedures to update the frame in such a way that the resulting sample estimates accurately reflect population changes.

Both the INE and UChile begin their respective survey designs with the same sampling frame, i.e., the decennial census of population. After the census results are available, both have procedures to update the frame. However, as described in the next steps of sample selection and estimation, the two organizations differ somewhat in their approaches in the use of the updated frame.

2) Sample design

The sample design includes stratification, stages of sample selection, clustering, sample size and allocation, methods of selection, sample maintenance, rotation, etc. It describes how the sample is selected and updated. Weights or expansion factors are applied to each sample person, which are then summarized to sample estimates. Therefore, some of the differences in the sample estimates could be the result of differences in how these activities are executed.

Following a census, both INE and UChile design a stratified, two-stage sample of dwelling units. After the 1992 Census, INE did a first stage probability proportionate to size (PPS) selection of sections (cluster of dwelling units) and, within the sections, selected an equal probability of dwelling units, yielding its first sample. UChile did a first-stage PPS selection of city blocks (cluster of dwelling units) and, within the sample blocks, selected an equal probability sample of dwelling units, yielding their first samples. After about a year (and continuing throughout the intracensal period), in order to update the frame and sample, both INE and UChile periodically review their respective first-stage sampling clusters and note any changes in the number of dwelling units in each sample cluster. For INE, the staff obtains a list of recent building permits in first-stage clusters and places them in a "new construction stratum" for random selection. For UChile, through a screener survey, first-stage clusters are re-listed, and units are added or deleted to the list of original units in each sample cluster; accordingly, the measures of size of each respective sample cluster are changed prior to the selection of the second stage sample of dwelling units, yielding the updated samples (again, throughout the intracensal period). The two organizations depart in their approach to providing the sample estimates.

After the sample redesign and selection of the first sample, the INE does **not** select new first-stage clusters and may or may not reallocate the sample size within the first-stage clusters. In either case, however, they do recognize that any new measures of size used in the second stage of selection affects the weights or expansion factors, and new weights are calculated. The variation of weights may increase the variance (sampling error) of the estimates slightly, but the estimates are **not** biased. This follows standard international estimation practices.

For UChile, on the other hand, after the redesign and the first-stage sample clusters and measures are updated, then the second-stage sample sizes are reallocated to maintain the self-weighting sample aspect of this survey. We believe that there is a possibility that the newly allocated sample sizes for several second stage clusters could be **much** larger than the average workload. If this occurs – and we believe that it does upon occasion – then the newly allocated sample sizes for second-stage clusters is capped. The capping is not a problem *per se*, but the assumption that the self-weighting aspect of the sample design remains intact could be a problem. Since UChile does not directly recalculate new weights or expansion factors, it cannot recognize whether or not a bias, as well as the magnitude of that bias, has been introduced into the sample estimates.

In summary, INE treats changes within the first-stage cluster measures of size by incorporating changes in the weights, which may increase the variance of the sample estimates slightly. UChile deals with such changes by using altogether new measures of size to reallocate the sample sizes within the first-stage clusters, while also maintaining the self-weighting feature of the sample design. However, if a reallocated sample size for a first-stage cluster is modified, then the self-weighting feature is also modified, and, therefore, a new weight should be calculated to provide an unbiased estimate for that cluster. By assuming that the self-weighting feature is intact, UChile appears to be introducing a biased estimate for the cluster. The frequency and magnitude of this bias may (or may not) be trivial, but it cannot be detected at all unless weights are directly calculated and reviewed. If there is a bias resulting from this issue, it follows that sample estimation is affected for the UChile, *vis a vis* INE. We will revisit this issue in our sections on "terms of reference" and recommendations.

3) Sample rotation

Sample rotation refers to how long a given household remains in the sample. This is handled differently across countries, and sampling experts will not, as far as we know, defend any one pattern over another. Indeed, rotation patterns used will often depend upon whether data are obtained on a monthly, quarterly, or some other basis. Therefore, whereas the patterns selected for the two Chilean surveys are, in fact, different, we cannot say that there is any statistical difference, or benefit, resulting therein. For INE, the rotation pattern is described as "0-6-0," meaning that a household comes into the sample for six consecutive periods (once each quarter) and then is gone forever. With UChile, the pattern may be described as "2-2-2," which means that a given household is in the survey for two quarterly months (say, March and June), out for two quarterly months, and then back in for two more quarterly months, before exiting forever. With both rotation patterns, there is appropriate emphasis of continuity over consecutive quarters as well as quarters over the previous year.

4) Estimation

An estimate is a numerical quantity calculated from sample data that is presumed to represent the "true" quantity for a given population. Three sub-topics – imputation, weighting, and sampling errors – within this area address issues relating to the variability, or bias, of final survey results.

Imputation for non-response is the process used to resolve problems of missing, invalid, or inconsistent responses identified during editing. In both surveys, the imputation process assumes that all non-respondents – whether outright refusals, partial refusals (in which adequate labor force classifications can be made), vacant units, etc. – are very similar, either at the section (INE) or strata (UChile) level. For INE, the imputation method involves an adjustment of the weights of the respondents to the level of respondents plus non-respondents. For UChile, the imputation method known as a "hot-deck" procedure is

used. The problem with the hot-deck procedure is that the loss of sample due to non-response is, in effect, not reflected at all, and the University, therefore, should strongly consider using a weight adjustment for non-response. (In some countries, distinctions are made between refusal non-respondents and vacant/demolished non-respondents. Refusal non-respondents only are considered "non-zero" and are imputed for, whereas vacant/demolished non-respondents are considered "zero" and are excluded from imputation.) A review of the non-response tables reveals that currently, while the response rates are comparable, there are different type A (refusals and not at home), type B (vacant dwellings), and type C (demolished dwellings) non-response rates between the INE and UChile surveys. Someone from each organization needs to review and confirm whether the definitions are the same. Again, we will revisit this issue in the sections on terms of reference and recommendations.

Weighting or expansion factor

The sampling weight is equal to the inverse of the inclusion probability generated by the sampling design. This includes the basic weight and any other weight due to sub-sampling. Weights expand sample data to universe level estimates. As noted above under "sample design," the weights or expansion factors in INE are equal to the inverse of the inclusion probabilities generated by the sample design, whereas with UChile this may not be the case, in certain circumstances. Hence, for UChile, a bias may be introduced; only with research into the weighting can there be a determination as to the frequency and magnitude of this error, which may be either trivial or significant.

Control totals are independently derived auxiliary information used for improving estimation. They are typically population control totals, such as age and sex groups, at national or sub-national levels. INE currently uses two control totals – males and females 15 years and over – at sub-national levels for ratio estimation to improve survey results. With UChile, there are currently no post-stratified adjustments to population controls! The University addresses the issue of survey frame growth through screener surveys to enhance the design and selection of new construction dwelling units. However, this effort does not entirely address the issue of survey coverage! Independent population estimates are usually derived by demographers from administrative records, such as births, deaths, migrants, etc., and other auxiliary data but **not** from the survey (e.g., screener survey) itself. Population estimates derived from the survey itself are **not** independent and **are** subject to sampling error in the overall estimation process.

Use of population control totals in ratio estimation usually improves data estimates, i.e., reduces error, for highly correlated variables such as employment but has minimal effect on less correlated variables such as unemployment. Therefore, INE's use of control totals improves its employment estimates over those currently from UChile. The comparative effects for unemployment would be minimal. More discussions of this issue will be in the sections on Terms of Reference and Comparison of unemployment rates.

Variances – sampling errors or coefficients of error – are measures of sources of error when the survey results are based on a sample of the population rather than the entire population. Variances of estimates enable users to evaluate the sample design contribution to the quality of the estimates. Initially, both survey organizations set target precisions for determining sample sizes for their respective surveys. For INE, it was a CV of 2 percent on an unemployment rate of 8 percent, while UChile set a CV of 4.3 percent on an unemployment rate of 15 percent. However, due to specific sample design differences – e.g., stratification and allocation of sample – and changing populations – e.g., lower or higher unemployment rates – over time, the CVs of the current sample estimates must be calculated to confirm the sample design assumptions of precision.

INE has derived variance estimation formulae and has calculated variances for its survey estimates, some of which have even been published. While UChile has also documented variance estimation formulae, we have not observed any calculated variances for the survey estimates. It is common practice, internationally, for survey organizations to provide variance calculations and to publish sampling errors for data users.

Questions raised in original "Terms of Reference"

Prior to the Central Bank's contractual terms of reference with us, dated 24 October 2005, there was a much earlier document of proposed work by consultants, entitled "Terms of Reference – Employment Surveys in Chile." This was considerably more extensive with respect to answers desired relating to the two surveys. It raises issues for the need for an accurate measurement of employment and unemployment for gauging economic trends, particularly during periods of recession. Because there have been a number of comments on this subject, we will attempt to address it directly in a subsequent section of this report. In this section, we will cover the specific areas laid out in the earlier "terms of reference" document – basic definitions and questionnaire, sample design, fieldwork, estimation process, and disclosure of information – wherever we haven't already directly (or indirectly) addressed them.

1. Basic definition and questionnaire

The question is raised as to the preferred method of measuring "participation in the labor force," i.e., by determining first the working status of the responder – employed, unemployed, or not in the labor force – or "by measuring the actual participation rate directly." We think that the answer is clear-cut and one followed everywhere in the world. One must, through a survey of the population, identify the actual working status of all persons (above a given age), according to what they were doing over the entire reference period (a week), which would then divide that population into the three categories. To attempt to somehow measure labor force participation directly by asking, we suppose, such questions as "Are you in the labor force, either working or looking for work?" or "Do you consider yourself economically active?" would not yield very accurate information. If surveyors were more explicit, they would necessarily obtain employment and

unemployment information, and therefore we think the issue becomes circular and, hence, moot.

A second question raises a more important point, to wit: "The way questions are formulated is critical." We fully concur. The issue then becomes: what are the most optimal questions for a country? As discussed fairly extensively in pages 2-4, international standards have been developed that are based on a person's activity during the prior week, with the emphasis for employment being on a person having done any work at all, rather than activity for the "larger part of the week." While we side with international standards, we also might concur, as will be described in the following section of the report ("Purpose of labor force surveys"), where there is a desire to measure something else or have narrower definitions of employment or conversely, broader definitions of unemployment, then such surveys might have value for a country. Even under those circumstances, concepts should be carefully established and questionnaires be designed to measure explicitly those concepts.

Another issue: "Any employment survey should measure degrees of employment 'quality'." The writer goes on to suggest that a job's quality should be measured and also the person satisfaction derived from a job. We do not concur, at least for official labor force surveys. Issues of job quality, job satisfaction, happiness, etc., are inherently subjective and depend on many factors, not all of which are either measurable or consistent from person to person. Do I like my job? Maybe, maybe not, but one cannot expect any two persons with the exact same job and pay to give the same answer. Such questions might be asked as modules to a survey – even for INE or UChile – but they should be carefully designed and tested, and the results will need to be analyzed with care. Perhaps Chile's survey organizations will wish to consider that at some future date.

"Types of unemployment?" Our experience in this area is rather limited. We know that economists identify at least three types of unemployment – deficient demand (cyclical), structural, and frictional – and recognize that they cannot be directly measured via surveys. Many surveys identify four categories of "reasons for unemployment," more accurately, "status at the point of entering the unemployment stream" – job loser, job leaver, new entrant to the labor force, and re-entrant to the labor force. The writer of the "terms" suggests that one might measure whether a person "feels" unemployed. Again, we have no knowledge or experience with this notion but see it as subjective as well. Therefore, perhaps a module, with carefully designed questions, might be in order for either of the two surveys.

"Modules on income and other subjects?" Many countries have modules added to their surveys, with income topping most lists. In the United States, annual income for individuals and families is collected in March of each year in its "Current Population Survey – CPS." There are many other modules in the CPS each year, which any interested person can investigate by communicating with the U.S. Census Bureau, either directly or via its web site. It might interest Chilean economists to know that, in addition to annual income, the regular CPS monthly survey has questions on how people are paid (hourly,

weekly, monthly, annually, etc.) and what that rate is (one would have to look at a questionnaire to see the exact questions asked), with data calculated for weekly pay (using hours worked data, collected in the survey). Data are regularly published on this. Clearly, both annual income and rate of pay data can be linked with data on employment status to give people a handle on such issues as adequate or inadequate work situations, if not job satisfaction.

Finally, it has been suggested by Professor Joseph Ramos of the University of Chile (not in the terms of reference) that one ought not want to have a labor force survey that so adhered to international standards that it produced a very low unemployment rate and simultaneously missed much inadequate employment activity (hopefully the spirit of his point). We are certainly empathetic with this assertion. The problem in the regard is that "unemployment" is often – indeed, too often – viewed as a measure of hardship. As used internationally, it is not such a measure and cannot be. Hardship measures necessarily should encompass low pay and family income, less than full-time work (where full time is desired), unsatisfactory working conditions, marginal jobs, labor market discouragement, and other factors. These can be – and often are – measured in labor force surveys. Some countries, such as the United States, collect and publish data on broader measures. Chile could too, especially INE and UChile, where the capacity may already exist. In a subsequent section of this report, we discuss the entire subject of "alternative measures of unemployment," based on the U.S. example and suggest how the new INE questionnaire and statistics to become available might enable the production of similar measures.

2. Survey design

Stratification is the partitioning of the sampling frame into like sample units in order to reduce sampling error. With respect to the strata question, as we stated previously, the UChile survey has eight strata, whereas, of the 146 strata in the INE national survey, 35 are included in Santiago for comparison. Clearly, the term "stratum" does not have the same meaning across the two surveys.

With respect to sample rotation patterns, we have already discussed the differences – INE's "0-6-0" and UChile's "2-2-2" – and believe both are perfectly logical and acceptable. We know of no optimal or strongly recommended pattern for surveys, which are typically determined according to the individual needs of countries. We do know that, with monthly surveys, Canada has a "0-6-0" scheme, implying no year-to-year overlap of sample, and the U.S. has a "4-8-4", implying a 50 percent overlap year-to-year.

It was stated that between 1992 and 2002, the number of households in Chile increased by 25 percent. Such an increase in population size would also increase the sample size over that period by about this percentage if the sample frames were updated – they are in both surveys – and the same sampling rates were used over time. However, in order to maintain approximately the same sample sizes over intracensal periods – so that survey costs do not skyrocket – some de-facto sub-sampling must be carried out, and the sampling rate(s) or, inversely, the expansion factor(s) must change over time. As mentioned in the previous

section, INE recalculates the overall probability of selection – and hence the weight or expansion factor – at the section level over time. Probabilities of selection should be reflected in the development of the weights/expansion factors that are used to produce unbiased survey estimates.

Since UChile is a self-weighting sample, the staff does not directly recalculate new weights or expansion factors based on revised probabilities at the "block/sector" level over the intracensal periods. However, due to the combination of sample rotation and updated sampling frame (owing to population changes over time) and the constraint of maintaining the overall sample size, the "self-weight" of the incoming rotation group must be different from the self-weight of the other rotation groups. Since the entering rotation group's self-weight is different from the other groups' self-weights, the calculation of the survey percentages cannot be simply the ratio of the sum of the unweighted totals across the rotation groups in both the numerator and denominator, e.g., unemployment rates. Weighted sums of both the numerators and denominators must be calculated prior to calculating percentages. An initial review by UChile staff did not indicate significant differences among unemployment rates, but we believe that during periods of dynamic changes in economic growth and thus in employment, the levels could be different.

Currently, both INE and UChile update their samples for new construction by periodically re-visiting the first-stage units of selection and listing any new units for possible selection into future rotation panels. UChile currently only uses physical observation (through its screener survey) for identifying new construction in first-stage units. INE also uses the local government permit issuing system to help identify new construction in first-stage units. If all the local government permit-issuing systems and records are complete in coverage and content, then both the INE and UChile could place all the permit-issuing records of both the sample and non-sample first-stage units in the new construction strata for possible selection into the sample. At least for new construction, this sampling approach could eliminate any between-first-stage-unit variability.

3. Fieldwork

The questions regarding surveyors are largely answered already. As best as we can determine from reviewing the field manuals, the field supervisors for both surveys do review/edit all the field staff work for obvious omissions and errors. There is also a designated sample taken of the overall sample (control) for a more careful review of the completed questionnaires.

4. Estimation process

We have already covered the estimation processes fairly fully but do have some information to either add or reiterate.

In the previous section, we briefly reviewed the adjustment for survey non-response in both surveys, but we did not know for the UChile survey what the impact of the "hot-deck"

method and the accompanying assumption of non-response rates make with regard to the self-weighting component in the estimation. For the self-weighting component, the assumption is made that the non-response adjustment weight is "1" – meaning that the response rate is 100 percent! Clearly, there is a potential bias as a result of this assumption.

Demographic projections/independent estimates. There seems to be a misunderstanding about the role of independent population estimates in the estimation process. Independent estimates are intended to address the issue of population coverage. They are not intended to be used as the primary weight/expansion factor for producing the survey estimates. The inclusion probabilities (mentioned in the survey design section) are used as the primary weight/expansion factors for producing the (unbiased) survey estimates. The independent estimates are then used to adjust the unbiased estimates for under-coverage rates and improved estimates of highly correlated variables of interest (e.g., employment). Of course, if the independent estimates have large errors, that is, larger than the sampling errors, then perhaps it would be better not to use the independent estimates. Demographers have more expertise in this area in determining the quality of the independent population estimates. Since it seems that only the INE survey uses independent population estimates for adjustment, INE could provide under-coverage/over-coverage rates that would indicate whether independent population estimates have a significant impact on its survey estimates.

For the UChile survey current estimates, because there are no adjustments of sample estimates to independent population estimates, there are, therefore, no adjustments for any under-coverage/over-coverage of persons in the survey. Also, the final sample weight in the survey assumes that the coverage rate is "1", that is, the coverage of persons is 100 percent. Clearly, this is not the case.

We have reviewed the latest new tables produced by the University that used new weighting procedures – "Responses to Comments Received, December 20, 2005" – and are encouraged by the results. For example, in table A1 comparing the traditional ("hot deck") versus expanded (weight-adjusted) estimates for non-response in table B1 for September 2005, there should be little difference between the level estimates due to imputation. Both procedures do produce comparable estimates of levels, as expected. Also, the imputation methodology may not significantly affect the differences between INE and UChile survey unemployment rate estimates. But, the use of population controls may affect the differences in levels. (See "Unemployment rates compared" section of this report, including the assumptions for said section.)

We have also reviewed tables A1 and C1 (of the University's December 20 response), where table C1 is supposed to reflect the **first time** use of independent population controls on the UChile estimates in table A1. Usually, due to survey under-coverage, the use of independent population controls would increase the survey estimates. However, in this case, their use seems to decrease those estimates. Thus, either the UChile survey estimates (Table A1) are too high or the independent population estimates are too low. It does appear that the UChile survey estimates, especially for total population, may be too high. The

University needs to review their unbiased estimates for total population 14+ for reasons why they are over-estimated.

Also, we still have not seen the numerical calculation of the self-weighting weights through use of the inclusion probabilities. In fact, none of the information provided to date has ever provided the numerical values of these self-weights. Although there may be some cancellation of intermediate values during their initial calculations, over time with population growth, these self-weights must be recalculated by rotation sample. The listing of the self-weights over time should reflect the population growth during that time period.

While the UChile questionnaire does not probe sufficiently on the employment side, it nonetheless somehow shows higher levels of employment that INE. However, INE does use population controls in estimation, and, as we have been discussing, UChile currently does not. If the comparison of the employment results of table E3 of the University document referred to above is to be believed, then the use of comparable population controls for UChile estimates would very much clarify these INE-UChile employment comparisons, suggesting that INE would indeed show comparable levels of employed persons.

Error levels. Normally, the estimated errors of survey estimates refer to the errors due to sampling. These errors do not include any non-sampling errors due to under-coverage/over-coverage, imputation for non-response, response errors, processing errors, etc. These non-sampling errors and their impact on the estimates are more difficult to measure. Therefore, great efforts are usually made during the conduct of surveys to minimize them. That is why under-coverage/over-coverage, non-response, and quality control error rates are also important indicators for assessing the quality of survey estimates. Low non-sampling error rates would indicate that sampling errors are the more significant portion of the survey estimate errors.

In the final major section of our report, "Findings and recommendations," we are recommending (recommendations 10 and 11) that both INE and UChile develop a formal system of re-interview surveys and quality control procedures to provide data for a complete error profile of their respective surveys. Error profiles should describe the "who, what, where, and when" related to repetitive errors, their magnitude and impact on estimates, and how they are being addressed. They should include studies and results with not only analyses and evaluations of supervisory efforts but also analyses and evaluations of the training and characteristics of both supervisors and interviewers that would help improve the surveys.

Since the relative errors for proportions are usually smaller than the comparable relative errors for the numerators of the proportions only, most users prefer to discuss the "more reliable" estimates of proportions (rates or percentages). Because the relative errors due to sampling are also estimated based on the sample itself rather than the universe, all such error estimates also have variances/errors. Therefore, since there are errors on the error estimates, such error estimates are approximations. This is common practice for surveys

that do provide estimates of relative errors along with their survey estimates, and the practice should be encouraged.

In addition, there is the question, "Are there any recommended levels for these errors?" Assuming minimum non-sampling errors and adequate sample sizes, there is a guideline for this question. In general, for demographic surveys and levels, relative sampling errors (coefficients of variations) of about 30 percent may be acceptable, 20 percent are better, and 10 percent or lower are the best estimates.

Information on all of the above subjects may be found in the following U.S. Government publications. On the subject of survey design and sampling errors, see Census Bureau and Bureau of Labor Statistics "Technical Paper No. 63." For non-sampling errors, see "Statistical Policy Paper No. 31. For an evaluation of census labor force and Current Population Survey results, see "CPS-Census Match 2000."

5. Disclosure of information

We have several recommendations regarding the publication of labor force data by both INE and UChile in the "Findings and recommendations" section. We are particularly cognizant that INE needs to make important improvements in this area, especially with respect to the tabular and analytical contents of its reports. We view data analysis to equally important with data publication, and INE needs to address its public information process.

We also encourage the INE to explore the possibility of providing a public use microdata (PUMS) file for each quarter of data published to any user who requests one. For a geographic area as large as Santiago and taking into account the sampling and masking of certain sensitive variables, this activity is very much doable, without breaching the confidentiality of respondents. The U.S. Census Bureau has been providing such public use files since the 1960s, and we believe that many other statistical agencies in many countries are doing likewise. With the Census Bureau's encouragement, the Japan Statistical Bureau has recently begun providing such files.

The CASEN and the Census

In addition to the fact that the UChile survey has produced higher unemployment rates for "Greater Santiago" on a consistent basis beginning in 1998, there have been two other sources of difference that suggest to economists and many other interested parties that INE rates have been too low. The University of Chile has been producing a survey for Santiago in Decembers of several years (1998, 2000, and 2003) in which more or less identical questions and concepts to the INE have been utilized. This is the CASEN. Also, the Census of 2002 (for April) allowed the calculation of unemployment rates.

First, looking at the Census, one can readily dismiss this as a relevant basis for contrast, as the questions are much more limited and conceptually incomplete, compared with INE's, and they are not objectively presented to respondents. One would also have to determine how they are asked and the extent that they were tested and therefore understood by typical Chilean respondents. We are, of course, unable to do that. We also know nothing about the training of Census interviewers, but believe it was rather limited; we have learned that all interviewers are not paid for their work – it is an all-volunteer operation – and many are "high-schoolers." Indeed, we have a significant problem with the inherent notion that, because data come from a census, they are devoid of errors of all sorts. This is not at all true, whether it be the Chilean censuses or any other country's. Census data suffer from errors of non-response, coverage, measurement, processing, etc. Therefore, for all of these reasons, we strongly suggest that, once and for all, the Census labor force data not be used in these comparisons. (We have provided a pamphlet, referred to above, that includes a summary of such issues for the United States.)

The CASEN survey does follow ILO guidelines in its labor force questions. The questions are not exactly the same as INE, but we would not quibble with the differences; in fact, the CASEN questions are potentially more precise for identifying labor force status. (They do not start with whether a respondent worked last week for pay, however.) One absence appears to be the failure to explicitly identify "unpaid family work." (It could take place, but we cannot figure out how the CASEN's first question works in this regard.) This is available, of course, for the INE. Its potential absence in the CASEN questionnaire would suggest, all other things equal, fewer employed persons in the survey (given that self-employment is typical in Chile, it follows that unpaid family work is fairly common) and therefore potentially more unemployed. We cannot, of course, suggest magnitudes of difference. Another absence is the use of the "availability test" for unemployed persons, but, as we have discussed (*ad nauseum*), neither does INE nor UChile at this point.

In all likelihood, there could well be technical differences between CASEN and INE – such as survey collection, data estimation, etc.– that might affect data comparisons, but we do not have access to this information.

Purpose of labor force surveys

A major aspect of current dissatisfaction with the INE survey stems from the fact that the labor force data do not appear to track the business cycle as well as the UChile survey. More explicitly, particularly since 1998, the unemployment rate via INE failed to rise very much as the country went into recession and over time became considerably lower than the UChile rate. (See figure 1 on page 1.) We admit to being somewhat puzzled by the divergence ourselves and probably have not been very successful or helpful in explaining the divergences where they have occurred.

It is, therefore, useful for us to point out that, from our experience, labor force surveys are typically designed to measure employment and unemployment, as accurately as possible.

We have attempted to address all of these issues based upon our knowledge of how surveys of this type are carried out internationally and, of course, particularly in the United States. We believe that the purpose of labor force surveys was never explicitly to measure economic conditions and trends – but rather, labor market conditions and trends. We believe that economic trends, such as the identification of business cycle peaks and troughs, as well as other measures of economic growth, are identified through a large number of economic indicators. They include Gross Domestic Product, of course, with the unemployment rate being just one of many indicators. In the United States, the unemployment rate is often designated as a "lagging indicator," because it is viewed as moving subsequent to economic turning points, and employment ("nonfarm payroll employment," derived from the U.S. survey of nonfarm establishments) is a "coincident indicator."

In the Chilean case, it has come to be recognized that the UChile survey could well be producing better indicators of recession than INE, with respect to the unemployment rate (in Santiago). At this juncture, we cannot argue otherwise. We can only say, as we have been stating throughout our report, that we believe that, from the standpoint that it measures labor market activity for the entire country of Chile, the INE ought to be viewed as the preferred survey for employment and unemployment statistics.

While it is true that the exact reasons as to why the surveys deviated beginning in 1998 are still unknown, we think that our review and recommendations should stimulate discussions that may lead to improvements in both surveys. We suspect that, with a new INE questionnaire for 2006 (or 2007), a sharper, better measurement of labor force activity will become available. We see no reason why the UChile survey questionnaire cannot be changed as well, not to mimic INE but rather to 1) have more objective measurements of whatever definitions the University and the Central Bank might wish to utilize, and 2) allow for broader measures of unemployment. Whether such changes will also allow for a better measurement of economic developments would depend on the redesign and new survey goals and, of course, time.

Unemployment rates compared

It is useful to look at unemployment rates from the three major surveys – INE, UChile, and CASEN – for a recent time period, which is shown in Table 1 for the most recent period for which data from all three surveys are available.

Table 1. Unemployment rates for fourth quarter 2003

INE	7.9
UChile (Dec.)	11.7
CASEN (Dec.)	9.7

We would have liked to have attempted a statistical adjustment of the UChile rate, based on known differences – i.e., the inclusion of 14-year-olds and certain weight adjustments provided by the University. It now appears that the inclusion of 14-year-olds in the data does not make much of an impact on comparative unemployment rates – an increase of maybe a tenth or two-tenths of a percentage point. This would appear to be offset by a small increase due to adjustments in weighting the estimates. This largely leaves us with the view that, **with respect to percentages such as the unemployment rate**, the biggest differences stem from questionnaire and interviewer effects. As we shall now see, **including population controls in the estimation does significantly affect levels**, especially the larger labor force and employment categories. Table 2 demonstrates this point.

Table 2. Unemployment rates, December 2002 - September 2005
(Comparison of INE versus UChile population-controlled figures)

Month*	Unemployment ('000)		Labor force ('000)		U rate (%)	
	INE	UChile	INE	UChile	INE	UChile
Dec.02	176.3	292.7	2534.8	2505.8	7.0	11.7
Mar.03	231.8	337.9	2596.4	2587.7	8.9	13.1
Jun. 03	226.6	332.2	2593.9	2510.0	8.7	13.2
Sep.03	223.9	332.0	2574.4	2501.8	8.7	13.3
Dec.03	206.5	300.9	2628.3	2566.4	7.9	11.7
Mar.04	245.0	304.3	2654.0	2596.7	9.2	11.7
Jun. 04	257.7	301.0	2627.1	2596.2	9.8	11.6
Sep.04	276.8	298.1	2717.2	2601.3	10.2	11.5
Dec.04	219.7	337.2	2760.9	2714.0	8.0	12.4
Mar.05	236.0	300.8	2738.2	2647.8	8.6	11.4
Jun. 05	222.5	313.4	2751.7	2681.5	8.1	11.7
Sep.05	223.3	272.1	2722.3	2627.9	8.2	10.4

*Data for INE relate to the quarter centered on the indicated month.

First, the assumptions used in Table 2: The data from INE relate to the population 15+, and population controls by sex and strata were used. The data from UChile are from "Response to Comments received on December 20, 2005" document, tables E3 and E4, provided by the University (based on reactions to a preliminary final report from us).

It is to be recalled that the definition for the INE urban area of metropolitan Santiago has three more cities than the definition for UChile's Greater Santiago Area. Therefore, the control population 15+ of 4,680,600 for INE's urban metropolitan Santiago area should, in fact, be larger than the control population 14+ of 4,528,400 for UChile's greater Santiago area. However, both populations should be otherwise be comparable, after taking into

account the differences due to geographic coverage and age scope. We are assuming that the INE independent population control estimates are accurate, which will be confirmed, or not, by the latest census numbers that will be published shortly. There is also the clear implication that, by UChile using population controls for the first time, owing to the present investigation, its survey estimates for labor force, employment, and unemployment should be more comparable to INE estimates. It seems that the University has recently developed its own population control estimates on a 15+ basis as well. Now, as to whether the University has developed independent and logical population controls at this point, we must leave it up to them for further research in this and other similar areas.

We produced Table 2 for comparison purposes. It is to be noted that the adjusted for population controls of UChile unemployment rates (from Table C2 in the referenced University paper) are close to the traditional (as published) rates (from Table A2), thereby demonstrating what little effect the use of population controls has on percentages. Although there are now smaller differences between labor force estimates, unemployment rates remain rather far apart. Differences in unemployment levels range from about 118,000 to 21,000 persons. We have generally dismissed the difference due to geographical definitions, described above, and also the difference due to the age scope.

We offer a number of conclusions at this point. First, the issue of self-weights not being constant over time may affect estimate levels, but not enough to affect significantly the differences between unemployment rates. Second, the imputation techniques may also affect estimation levels, but again not enough to affect unemployment rate comparisons. Third, the use of population control totals definitely affects estimate levels, to a significant degree, but, again, does not affect percentages very much, if at all.

Standard practices call for the calculation of **levels first** and then rates, not *vice versa*. Therefore, the standard practice is to use the probabilities of inclusion to calculate the basic weight, which may or may be self-weighting. Then, the expansion weight adjustment is used for imputation by strata for non-response, etc., which will definitely cause the weights to be non-self-weighting. Moreover, using independent population control totals by age and sex to improve coverage will also cause the weights to be non-self-weighting. But these practices should yield the best-estimated levels **and** the components of estimation for analyzing, evaluating, and improving these estimates. We believe that, should the opportunity present itself, the UChile estimation system should be redesigned to follow these practices, in order to produce the best-estimated levels (see reference for Technical Paper 63 for Current Population Survey methodology).

As has been stated with some frequency, this improvement will not affect most of the differences between the two survey unemployment **rates**. Most of those differences stem from questionnaire and interviewer effects. In order to analyze and evaluate these differences further, one needs additional resources to develop a formal cognitive, re-interview, and quality-control program for both surveys (see reference to Statistical Policy Working Paper 31).

The INE labor force survey beginning in 2006

We have learned that INE is planning wholesale changes in this survey starting with data for the first quarter of 2006. One might generalize these changes as major improvements to the survey and, therefore, a very positive development. The downside (for the short run) of all of this is the potential for large "breaks in series." We say potential, as no one can know the true effects of the changes until the advent of several events. These are the actual release of the data for the first and subsequent quarters of 2006 and indications of difference that might be gleaned from a planned pilot survey and one quarter of "overlap," currently planned for the first quarter of 2006. The two aspects of change are: 1) a new questionnaire and 2) revisions in sample design and estimation, based on the 2002 population census and other considerations. These are discussed below.

1. Questionnaire changes

The INE plans for a totally revised questionnaire to collect labor force and not in labor force data increases the total number of questions in the survey from 22 to 76, a very dramatic change indeed. Our examination of the wording and coverage of the new questionnaire indicates that INE has a truly positive plan to improve the specificity and classification of labor force status, even more in keeping with general ILO standards. In short, we are most significantly impressed.

No changes are proposed that would affect the concepts of employment and unemployment, other than the addition of the "availability test" for the unemployed that we have alluded to previously. Added are questions that guarantee a more accurate measurement of labor force status, beginning with the very first question, and more information on the employed, such as duration of work contract, type and size of firm in which employees work, multiple job-holding, hours worked, involuntary part-time work, and "under-employment." Also, for the unemployed and the inactive population, additional information will be obtained, including the measurement of labor force discouragement among persons not in the labor force. The potential for research and simply a greater understanding of the status of the population will thus be greatly enhanced.

2. Sample design and estimation changes

In the first quarter of 2006, INE will launch a redesigned labor force survey based on the 2002 decennial census. Sample design changes include a change in stratification from the 146 strata nationwide to more strata. This should reduce some between-first-stage variances and improve the sampling variability of the total estimates, perhaps more for rural than for urban areas. Estimation changes include changes in population controls from current levels for strata to the more aggregate levels of regions. The generation of population controls for age 15+ by sex appears to be more stable over time at more aggregate levels, like regions or nationwide. Therefore, for 2006, INE is planning to carry out ratio estimation for the 15+ population by sex at the regional level, and it is expected

that, since the independent population controls are improved, this change will also improve the reliability of overall estimates.

Assuming that there are sizable population effects stemming from the Census – i.e., the intracensal forecasts were either below or above actual changes – this will imply a "break in series" between 2005 and 2006 labor force estimates. Standard procedures for statistical agencies typically call for an adjustment, or wedging, back in time to the previous "true" populations, thereby mitigating effects of the population changes. We understand that INE will in fact be carrying out such wedging procedures. Thus, they will be able to provide data users with labor force estimates under both designs (the new design will be simulated) back 10 (or more) years for purposes of analyzing differences of the new design upon estimates.

3. Planned overlap

INE, at present, has two plans under consideration to enable users to understand any data effects resulting from the new questionnaire. One is a small "pilot" survey of some 4,000 households, in which half is asked the old (current) questions and the other half the new questions. The other is an overlap sample in the first quarter of 2006, in which some 35,000 households will be asked the old questions, this being a separate panel from the 35,000 households being asked the new questions for the official survey statistics for Chile. (This is our understanding of present plans.) In other words, the new questions will be asked of the continuing 35,000 households in the first quarter of 2006, while a totally separate panel of households will be asked the old survey questions. Any differences for employment and unemployment, including sub-groups (age, sex, etc.), will be identified, so that data users can understand any potential questionnaire effects and thus any "breaks in series." We predict that there will, in fact, be breaks in series but have no way of suggesting where or of what magnitude. We do suspect, however, that more marginal employment and, therefore, labor force activity will be identified, and there will be evidence of the types or nature of such marginal activities. We do have some significant recommendations to make in the "Findings and recommendations" section regarding the overlap plans and timing of introduction of the new questionnaire.

Alternative measures of unemployment

Earlier in this report, we made a brief reference to the potential that labor force surveys have to provide alternative measures of unemployment, other than just the "official" unemployment rate. (See page 14.) In the United States, for instance, the monthly news release, "The Employment Situation," contains a table (A-12) that shows three "rates" that are incrementally higher than the official rate, which itself is designated "U-3." Thus, "U-4" adds "discouraged workers" to the unemployed total. "U-5" adds to the U-4 nominator a group called "all other marginally attached workers," and "U-6" takes this one last step by adding to the nominator "total employed part time for economic reasons." In November 2005, U-3 was 5.0 percent, U-4 was 5.3 percent, U-5 was 5.9 percent, and U-6 was 8.7

percent. (All rates are seasonally adjusted.) It is readily possible to view this table via the Internet by identifying the Bureau of Labor Statistics web site and looking up "The Employment Situation."

In order to produce a similar set of numbers, Chile would have to collect additional data in its labor force surveys. Data on persons working part time involuntarily, that is, "for economic reasons" (as opposed to those working part time because that is all they want to work), are already partially obtained via the INE survey, though not sufficiently to meet desirable measurement standards. The new INE questionnaire, however, will do an excellent job in this regard. It is not really possible to measure involuntary part-time work via the current UChile questionnaire. Discouraged workers, as defined in the U.S, are persons who want a job "now" but are not currently looking for work but have sought work sometime in the past year. This group is part of a larger category termed "marginally attached workers," who want a job "now" but are not seeking one currently (over the prior month). Thus, "other marginally attached workers" are those who have not sought work sometime in the past year.

The new INE questionnaire allows for the collection on data on persons discouraged from seeking employment via the question, "Why did you not look for a job or take action to start or resume your own business or activity during the last four weeks?" It would appear that the responses "don't believe will find a job," "tired of looking," "believe will not find a job because of age," "believe that no job or activity adapts to own skills," "too much red tape to start own business or activity," and "don't know where to go or who to ask" would result in persons being classified as discouraged. And indeed, the sum total of these responses might add up to "all marginally attached workers" in the U.S. framework, providing that respondents reply in the affirmative to explicit questions that determine whether they would accept a job or start a business within the next 15 days if "conditions had been appropriate." We would not presume to suggest any alternative classification of discouragement for Chile. But, should there be an interest in the eventual calculation of the alternative ("U") measures, it would follow that only two measures could be estimated beyond the official rate of unemployment (if INE chooses to follow the U.S. example).

Findings and recommendations

Since the principal task of our consultancy was to examine the surveys and statistical output of seemingly similar labor force information for the greater Santiago area, we will address this issue first. It should be rather apparent, both from our answers in the section on differences in measuring employment and unemployment, as well as from work already performed in Chile (R. Paredes and D. Bravo, J. Ramos, and S. Urzua), that there ought not be reasonable expectations that the labor force measures for the Santiago metropolitan area should always be expected to coincide with one another. (Indeed, should that have been consistently the case, i.e., concurrence over time, one might question the desirability of supporting the UChile survey at all, other than for the long-term perspective offered by the survey and its continuing capability of providing modular information of interest to the

Central Bank *et al*.) And so, yes, there are sometimes pronounced numerical differences, particularly during periods of negative or slack economic activity, and they can be largely explained by questionnaire variations. We believe that the INE survey will be greatly enhanced as a result of the introduction of the planned new questionnaire, and it will ultimately be highly desirable for careful comparisons to be made, once the results become available, between INE and UChile data.

The UChile survey has considerable value. It has provided fully consistent data on developments in Santiago since 1957, apparently at reasonable cost. It is also a useful vehicle, offering sufficient flexibility for adding important questions from time to time, including income information, and a very knowledgeable staff of economists supports it. We do believe that it would be desirable, in future releases of the UChile data for them to include a statement to the effect that the data for Santiago should not be expected to coincide with the data from the INE. Such a statement could be in the form of either a footnote or perhaps a box note placed at the bottom of the first page of news reports. Such a note could provide enough information to clarify the reasons for nonconformance (it should be short) and include information to the effect that these data should **not** be contrasted with the "official" data emanating from INE. Sooner or later, the media and public will gain a better understanding of this issue.

On the technical side for the UChile survey, **we recommend that the UChile staff undertake an extensive examination of their weighting procedures for producing labor force estimates. (Recommendation 1)** We believe that the self-weighting assumptions for levels may become invalid during unstable economic periods. In other words, how many of the final weights are different from self-weighting, and by how much? As we have already stated, depending on the frequency and magnitude of any differences, the impact on the estimates could be either trivial or significant. Also, in the area of final data estimation, we have learned that UChile does not utilize intracensal population controls at all, meaning that population estimates for persons 14+ are free to move according to survey results. This is highly undesirable, as it also affects the weighting procedures. **We recommend that, upon utilizing the 2002 Census figures for survey estimation, UChile immediately begin to introduce independent population controls. (Recommendation 2)** This should also be done on a 15+-population basis as well (see next paragraph). Both recommendations 1 and 2 offer the UChile an opportunity to redesign their labor force survey estimation system to be more comparable with other surveys (worldwide).

We have observed that one easily measurable source of difference across the two surveys is the lower age cutoff, beginning with age 14 for UChile and 15 for INE. Fourteen-year-olds do tend to have higher incidences of both marginal employment and unemployment in many countries, but we do recognize that they apparently do not make much of an impact on the overall UChile unemployment rate (maybe increases of 0.1 or 0.2 percentage point). Nevertheless, in the interests of allowing for direct comparability for data across the two surveys, **we recommend that future releases of UChile data include data on both a 14+**

and 15+ basis and that they produce historical data series (where possible) for the 15+ labor force estimates. (Recommendation 3)

With regard to the UChile questionnaire, as we have discussed, there are several aspects of the interview process that rely on interviewer memory from training instructions, because the specific questions, usually of a transitional nature, are not included in the questionnaire itself. This can often lead to differences in wording across interviewers, as well as disruptions in the interview process itself – both of which are detrimental to the survey data collection. We are also concerned about the identity and classification of persons who volunteer that they work without remuneration under the "unemployment" portion of the questionnaire, not only with respect to whether they are truly unpaid family workers and thus to be counted as employed or are just persons volunteering to work in, say, non-profit organizations and thus to be counted as either unemployed or not in the labor force (rather than as employed). This last issue also troubles us because the mixing of an employment category in the unemployment area is not in keeping with ILO standards that call for all employment to be measured before going to the unemployment portion of survey questionnaires. Therefore, **we recommend that the UChile questionnaire be amended to include all necessary language to permit a complete interview, leaving nothing to individual interviewer discretion, and also that they clarify and correct the problem of non-remunerated work. (Recommendation 4)** Examples of questions that might be considered to resolve the marginal work and unpaid worker issues are provided in page 5 of this report. Potential language to avoid the problem of interviewer memory in obtaining information is suggested in Appendix II.

One further observation regarding the UChile survey is in order. We learned that the Central Bank had requested several questions in a 2005 module involving opinions of the "general economic situation" and expectations for the CPI results in the next year. These were included as a module for the July survey. We were astonished that this was done. Good survey work requires/anticipates the testing of valid, objective questions, and we believe that notion was violated in this instance.

We turn now to the plans of the National Statistical Institute (INE) to introduce an entirely new questionnaire as well as making adjustments, statistical and otherwise, to incorporate the information from the 2002 decennial Census. **We find the new questionnaire excellent in all respects and support its introduction. (Recommendation 5)** And, of course, it is a complex, though, routine procedure to make the population and estimation adjustments.

We are, however, concerned about the fact that all of these things are being implemented at one time and that there will be too little information potentially available to the public regarding the statistical effects of all of the changes. What are the data effects of the new and additional questions? What are the population effects? What about sample design changes? If all of this is brought to bear beginning with the first quarter of 2006 and assuming that there are marked data differences, compared with 2005, there could be great public confusion, even consternation. The present INE plans calling for a small "pilot

survey" of some 2,000 households that will be conducted at the end of 2005 (December) is certainly a good idea, as it will permit some evidence of new questionnaire effects. Given the size of the pilot survey and its lateness, however, it probably can have only limited use in providing useful information on actual data effects that might be evident upon release of first quarter 2006 data.

The INE plan for an "overlap survey" for the first quarter of 2006 also is a good idea, but it appears to be "too little too late." **We recommend that the overlap survey extend for the entire year of 2006. (Recommendation 6)** This requires explanation. We believe that INE should introduce all of the population and estimation adjustments beginning in 2006 as planned, making any data adjustments back in time for the period 1995-2005 (or perhaps even back to 1992), which is normal following decennial censuses. The overlap sample, then, becomes a fully adjusted collection of data with the new questionnaire. We recognize that financing such an endeavor could be problematic, but, if the sample size for the overlap were, say 35,000 households spread out over the course of all 12 months, that would be consistent numerically with a one-quarter overlap of the same number of households. If a smaller sample size is necessary, we are certain the INE can work out the details.

The value of all of these points should be readily apparent. First, as we have alluded to above, it is crucial that the effects of the new questionnaire be isolated from all other design change effects. Second, there can be a lot of statistical "noise" plus considerable seasonal effects should overlap information be for time period of less than a full calendar year. Annual average comparisons, on the other hand, are quite useful and more accurate for delineating questionnaire effects. Thus, if, for example, there are fairly sizable changes in the incidences of employment and unemployment, these large data effects will be known and can be communicated to the public in advance of introducing the new questionnaire. (We also understand that a new president will be inaugurated in 2006, introducing a political aspect to the timing. Whereas it is desirable to keep politics out of the statistics and, hopefully, *vice versa* as well, it probably is not a good idea to create unnecessary statistical turmoil at such times.) **We therefore recommend that the new questionnaire be introduced in 2007 and not 2006, as currently planned. (Recommendation 7)** And, prior to the introduction of the new survey data, **INE should have one or more public forums explaining what it is about to do and describing expected differences. (Recommendation 8)**

We examined the INE quarterly issuances (news releases and reports) of statistical information, and it was clear to us that they were largely designed by statisticians and that economists did not figure prominently in published data inclusions, table design, and, most particularly, data analysis. Analyses that begin with numerical changes in the labor force, for example, with the unemployment rate for Chile being mentioned much later, show a lack of awareness of public interest or what is newsworthy. Also, analyses looked like "table reading" and thus did not reflect much in the way of an examination of the labor market situation and longer-term trends. In addition, important technical material was largely missing from the reports, such as information on concepts and definitions and the fact that they are consistent with international standards; statistical errors; etc. **We**

recommend that all news releases and reports of labor force data should be more analytical and user friendly, both in terms of the information provided and the technical nature of the data. (Recommendation 9) It follows from the last two recommendations that INE should err on the side of bringing statistics to life and communicating as much as possible with the press and public.

In inquiring with the INE staff about error rates of interviewers, we learned that INE had several ways of detecting interviewer error, including direct supervisory observation, re-interviews at the same households several days later by supervisors (on a sample basis), and special re-interviewing by senior interviewers from Santiago (also on a sample basis). They were frank in admitting that an "error profile" had not been developed for use in interviewer training sessions. **We recommend that INE undertake a systematic determination of such a profile on a continuing basis for all interviewer training. (Recommendation 10) This same recommendation applies to the UChile survey as well. (Recommendation 11)**

Because survey non-response can affect survey estimates, as well as the estimation process itself, it is important that data be continuously collected on this, including the various types of non-response – "not at home," refusals, vacant addresses, etc. **We recommend that both survey agencies produce such rates and make them available for public consumption on a periodic basis. (Recommendation 12)**

Another "technical" recommendation: **We recommend that both survey organizations continue to develop their systems for calculating and maintaining re-interview results, such that they can be made available to data users upon request. (Recommendation 13)** This type of information is useful for providing users with a more complete error model of the estimates.

Chile, like most countries, has considerable seasonality over the course of a year, due to such factors as weather changes, crop seasons, holiday buying periods, and the like. This seasonality is quite evident if one follows labor force data over time and can sometimes, maybe often, confound public understanding of underlying trends. This can be particularly troublesome with respect to unemployment rates. Therefore, **we recommend that both INE and UChile experiment with the seasonal adjustment of major data series – total employment, total unemployment, and the unemployment rate – and, when satisfied with the results, begin publishing such data in their recurring releases and analyzing them, rather than the unadjusted figures. Recommendation 14)**

We have one final thought, not expressed as a specific recommendation, but worthy of consideration nonetheless. As we have observed, both survey operations have strong and weak points. In particular, we are impressed with the methodological and estimation aspects of the INE organization but feel that it is weak in terms of data analysis and the provision of information to the public. On the other hand, we believe that the University is very strong in the area of understanding the economic significance of the data it collects

and the presentation of these data but needs to improve the methodological aspects of its survey. It seems obvious that one group could assist the other on a continuing basis.

Last words

We were singularly impressed with the degree of expertise that we encountered over the course of our investigations. The care for the data and the professionalism was most significant. We also greatly appreciated the openness that pervaded our entire period of investigation.

It should be evident from our report that we have uncovered numerous areas where improvements could be made or, at least, contemplated. We can only recommend, of course, and it will be up to the Chilean statistical and economic organizations to determine what is feasible and financially viable.

Appendix I. National Employment Survey Questionnaire

(Only those questions are shown that result directly in a classification of labor force status as "employed" or "unemployed.")

PO2 Which of these situations describes where you were most of LAST WEEK?

At work. ……. Go to PO6
With job, but not working…….... Go to PO5
Job hunting. …… Go to PO3
Household chores.…… Go to PO3
Studying.. …… Go to PO3
Retired or living off rent ……. Go to PO3
Permanently disabled for work… Go to PO3
Other……. Go to PO3

PO3 Did you work at all LAST WEEK, apart from household chores?

Yes……. Go to PO6
No……...Go to PO4

PO4 Even if you did not work LAST WEEK, do you have a job or business?

Yes…….. Go to PO5
No……... Go to P14

PO5 Why were you not working LAST WEEK?

Health condition
Vacation
Work problems
Personal or family problems
Other
Go to PO6

PO6-PO13 not shown because they relate to characteristics of employed persons.

P14 (Do not ask this question if respondent was job hunting LAST WEEK – i.e., response to PO2 was "job hunting")

Have you done anything to find a JOB IN THE PAST TWO MONTHS?
Yes…… Go to P15
No……. End questions

P15 What have you done in the PAST TWO MONTHS TO FIND A JOB?

Inquired directly with employer…… Go to P16
Inquired with friends or family……. Go to P16
Posted or answered ads, inquire
with employment agencies or municipality.. Go to P16
Went through formalities, took loan,
searched for site or plot to establish your
own enterprise…….. Go to P16
Nothing……. End questions

P16-P22 not shown because they relate to characteristics of unemployed persons.

NOTE: Persons are classified as "employed" if they respond in PO2 as "at work" or "with job, but not working"; as "yes" in PO3; or as "yes" in PO4. Persons are classified as "unemployed" if they responded "yes" in PO14 or had a "job hunting" response in PO2 **and**, in either case, gave any response other than "nothing" in PO15.

Appendix II. Greater Santiago Employment and Unemployment Survey, University of Chile

(Only those questions are shown that result directly in a classification of labor force status of "employed" or "unemployed" and thus begin and end with the "5" series.)

Occupation situation (P 5a, 5b, 5c, 5d, 5e)

Week of reference: (provided – Sunday, day, to Saturday, day, year)

Did you have a remunerated (paid) job during the week?

Yes→**Did you go to work?**

Yes (P5a) (Write down "yes" and go to P 6,7,8, &9)

No→ (P5b) (Interviewer asks a question not on the form such as "Why not?")

1. Temporarily absent – specify
2. On strike
3. Other reasons – specify

Go to P 6,7,8,9, &10

No (did not have a paid job)→**Did you look for work during the week?**

Yes→ (P 5c) (Interviewer asks a question not on the form such as "Which of the following answers describes you job-seeking status?")

1. Looking for the first time – Go to P10
2. Unemployed, having had a previous job – Go to P 6,7,8, &9
3. Works with no remuneration – Go to P 6,7,8&9. Also, ask of all three categories: **What alternative work would you perform?**
    A. 40 or more hours per week
    B. Between 20 and 40 hours per week
    C. Less than 20 hours per seek
    D. Does not specify a schedule

No→**Would you have accepted a remunerated or paid job offer during the week?**

Yes→ (P 5d) (Interviewer asks a question not on the form such as "How do you occupy your time?")

1. Housework – Go to P 11
2. Study – Go to P 11
3. Disability or elderly – Go to P 11
4. Works with no remuneration – Go to P 6,7,8&9.

Also ask of all four categories: **What alternative work would you perform?**

A. 40 or more hours per week
B. Between 20 and 40 hours per week
C. Less than 20 hours per week
D. Does not specify a schedule

No→ (P5e) (Interviewer asks a question not on the form such as "How do you occupy your time?")

1. Housework
2. Study
3. Disability or elderly
4. Works with no remuneration – Go to P. 6,7,8, &9
5. Other, specify

Note: To be counted as "employed," a person must answer "yes" to P 5a or P 5b, but also in P 5c and P 5d if they respond that they work with no remuneration. [We must confess that this represents a significant confusion to us, as we must assume that the category relates to "unpaid family workers," and yet it need not. This, therefore, represents a marked weakness in the questionnaire structure.] To be counted as "unemployed," a respondent must answer "yes" to "Did you look for work during the week?" (P 5c) and be either category 1 (looking for first time) or category 2 (unemployed person having had a previous job) as a response to the follow-up question.

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