# From Start to Pilot: A Multi-method Approach to the Comprehensive Redesign of an Economic Survey Questionnaire

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**Introduction**

In 2004, survey methodologists at the U.S. Census Bureau began a project with the U.S. Bureau of Economic Analysis (BEA) to aid in the evaluation and redesign of two of their self-administered survey questionnaires. These surveys, one annual and the other quarterly, collect foreign direct investment (FDI) data from U.S. companies that are foreign-owned. Although BEA goes to great lengths to assure that its surveys are not unduly burdensome, the forms may impose significant burden for some respondents, and data verification may be labor-intensive for BEA analysts. Some respondents expressed difficulties with comprehending the FDI concept and other particulars of the surveys, which may differ subtly but significantly from the ways they think about their companies. Our redesign strategies were aimed at facilitating respondents' comprehension of the FDI reporting requirements, as well as reducing the overall burden of completing the forms.

To maximize the effectiveness of our redesign, we undertook a comprehensive process using multiple research methods to gain a thorough understanding of the conceptual underpinnings of the surveys and the problems respondents encountered when completing them. The project was concluded when the redesigned questionnaire for the quarterly BE-605 was fielded in March 2007. This paper describes the various methods used throughout the project, and summarizes key findings from various qualitative and quantitative analyses. The focus will be on the BE-605 but will include relevant findings from research on the annual form (BE-15), because the two forms share the same conceptual bases and because the redesign strategies were developed to address similar reporting issues for each.

**Background – Form BE-605**

The BE-605 is a quarterly survey that collects data on cross-border transactions and equity positions between U.S. affiliates of foreign companies and their foreign parent companies and certain other affiliated foreign entities. The data are used in compiling the U.S. international transactions accounts, national income and product accounts, and the international investment position of the United States. The collection instrument is a self-administered form that can be mailed back to BEA or completed using BEA's automated filing system. The target population consists of all U.S. business enterprises in which a foreign person or business entity owns or controls 10 percent or more of a U.S. business. At present, the BE-605 universe is comprised of about 14,500 companies and other business entities. BEA mails the BE-605 survey questionnaire to approximately 4,000 respondents each quarter.

Aside from the basic ownership requirement (ownership of 10 percent or more of the voting securities), data collection on the BE-605 survey is based on a mixture of U.S. generally accepted accounting principles (U.S. GAAP) and economic accounting concepts. Although detailed instructions on reporting requirements are included with the questionnaire, respondents can often become confused. One often-encountered point of confusion is the rules for consolidating entities on a single BE-605 report. U.S. generally accepted accounting principles (GAAP) normally require a worldwide consolidation, which would include all of a U.S. business entity's majority-owned domestic and foreign operations. However,

[1] This report is released to inform interested parties of research and to encourage discussion. Any views expressed on statistical or methodological issues are those of the authors and not necessarily those of the U.S. Census Bureau.

the BE-605 requires that the foreign parts of the company must be excluded. This and other kinds of exceptions to U.S. GAAP sometimes lead to confusion and inaccurate reporting for some respondents. The difficulty in conveying these particular FDI rules to respondents in clear yet accurate terms was one of the main reasons why BEA decided to engage survey methodologists at the Census Bureau to undertake this research. It was hoped that by developing a more "user-friendly" questionnaire, with critical instructions presented more clearly to respondents, it could reduce the burden associated with completing the form and at the same time collect more accurate and consistent data.

**Methodology – stages of research, and findings from each stage**

Our research took place in three major phases, each with its own specific goals. In each phase we employed the cognitive interview technique that is typical of survey questionnaire evaluation. We also used other techniques in order to "triangulate" on reporting issues and to obtain a broader perspective on the response processes involved in completing the BE-605. As the project progressed, the methods employed in each phase provided complementary findings that informed decisions and applications for succeeding phases, and the methods used in the later stages allowed us to evaluate and modify our design decisions. In this section we describe the methods employed at each stage of research. Note that nearly all methods described in this paper are qualitative in nature, and that samples drawn for the purpose of employing the various methods are not intended to be representative of the BE-605 survey sample. Statistical analyses are not appropriate for the samples and findings described herein.

**Phase 1 – Background investigations**

Our goals for the first phase of the project were to achieve a thorough understanding of the survey forms both in terms of their content and the types of data they are intended to collect, as well as of the sources of error arising from the form and the response process. To these ends we employed three different techniques with three specific research targets, which provided a broad foundation from which to proceed with subsequent stages.

The first technique involved interviews with BEA survey analysts—the personnel who review survey data and prepare it for publication. We conducted three focus group interviews and one individual interview with analysts, segregating them according to which of the two surveys they worked on and excluding supervisors to avoid any bias that might have resulted from their presence (one supervisor was interviewed separately). Our goals for these interviews were two-fold: First, we gained a deeper understanding of the kinds of information the surveys attempt to collect and the reasons for the collections. Second, we learned about the kinds of reporting errors respondents tended to make, which errors were most significant in terms of data quality and analysts' workloads, and what the analysts thought were the reasons for errors.

During the course of each focus group interview, we asked participants to rank-order the survey items in terms of the difficulties associated with them, and this led to in-depth discussions of the nature of the items and what the analysts thought were the reasons respondents tended to have problems with them. The analysts' rankings of problematic items allowed us in later steps in the research process to focus our attention on a manageable subset of important problems, rather than the entire form. Analysts gave us their impressions of the problems inherent in the design of the questionnaire, most importantly the use of language and terms unfamiliar to respondents and the complicated instructions accompanying the form. The analysts also alerted us to the fact that they frequently communicate with respondents about their reports, to ascertain the quality of submitted data and, more significantly, to explain to them what exactly is being requested by specific items, that is, how to report correctly.

This last finding led us directly to our second method, observation of analysts' telephone calls to respondents. We observed, with respondents' permission, conference calls placed by analysts to respondents to clarify suspect or missing data. This approach allowed us to learn several things about the individual problems: First we heard each analyst's explanation of the problems from her/his perspective (prior to the calls), and then, more significantly, we got to hear an explanation of each problem from the perspective of the respondents themselves. This technique exposed us to the types of language and terms used in the conversations by which respondents were able to understand the requirements of the survey, and actual points of confusion related to the survey. Additionally, we listened to analysts' explanations of the

problems to respondents and of ways to avoid them in future survey reports. We found that the analysts often compensated for the inability of the form to clarify adequately the reporting instructions by making these explanations themselves. We would later expand on these findings as we attempted to bridge the divide between FDI concepts and GAAP records structures to facilitate respondents' correct understanding of survey items; these explanations informed the creation of concise instructions crucial to correct reporting, which we tested in the second phase of the project. We were limited in the information we could obtain during these conference calls, since we were observers and not participants. However, we were able to continue to explore these emergent themes in greater depth with our next technique.

Third, we went out into the field and debriefed respondents who had recently completed the survey. Respondent debriefings are semi-structured interviews in which respondents are asked non-directive questions about the data items they reported, how they retrieved those data, and how they interpreted the items on the questionnaire. Unlike the earlier methods, these interviews allowed us to meet face-to-face with respondents in their office setting and explore their reporting processes for the BE-605 survey from their perspectives and in considerable depth. For the debriefings we created an interview protocol based on the insights gained from our interviews with analysts and our observations of analysts' calls to respondents, as well as our experience with questionnaire design and knowledge of best practices in visual formatting principles.

We conducted interviews with respondents at 28 companies. The debriefing sample was purposively selected by BEA staff, with the following considerations: geographic proximity, to maximize the number of interviews in a given location; economic sectors of interest, particularly those with more complicated reporting requirements, though a range of sectors were recruited for the sake of wide coverage; and company size, with a preference for larger companies having greater impact on aggregate data. BEA personnel had an advantage in setting up interviews because of their existing rapport with respondents.

In the debriefings we were able to obtain a deeper understanding of the response process, especially respondents' interpretations of survey items and the nature and availability of information in their records. We were also able to cover a broader range of items in the forms than had been possible in the earlier phases of research. The effectiveness of the respondent debriefing technique in general is limited to the extent that time passes between the survey response and the interview, making it more difficult for some respondents to recall interpretations of items and data retrieval processes. However, this is mitigated in establishment surveys by the retention by virtually all respondents of their survey reports and the supporting documents they generate in the course of responding to surveys, which allow the response process to be reconstructed, in many cases allowing considerable exploration of their responses.

We found in respondent debriefings that the questionnaires were problematic for two main reasons. First, the way the forms were formatted made them difficult to complete. Both forms were printed on legal-sized paper, which made them difficult for many respondents to manipulate, photocopy, fax, and store. Both the quarterly and annual survey forms used small fonts, dense blocks of text, and dark lines separating items and sections which gave them a very crowded look, rendering them difficult to read and making important instructions easy to miss (see Figure 1). The forms also used complicated matrices in some sections, which were formatted such that respondents tended to overlook some important instructions. Perhaps most importantly, both forms had separate instructions, one located in the back of the form booklet and the other accompanying the form as a separate booklet. Both sets of instructions were quite lengthy and used the same small font and dense blocks of text as in the forms themselves, and tended to be ignored by respondents. The dense formatting, complex matrices, and separate instruction sections effectively obscured the important concepts that needed to be understood by respondents in order to report correctly.

The second reason respondents historically have tended to find the forms difficult and to report incorrectly has to do with the consolidation rules used in reporting, which follow a combination of specific economic accounting rules and U.S. GAAP. The most significant difference between reporting rules and U.S. GAAP we found has to do with the way corporations tend to consolidate their subsidiaries and other holdings for financial accounting purposes compared with the economic accounting rules for reporting to BEA, as noted above. Also, FDI and economic accounting concepts require that relationships and transactions between the U.S. corporation and certain kinds of affiliated foreign companies be treated and reported in specific

ways that can be, at times, confusing to some respondents. Following GAAP rather than FDI accounting rules has often resulted in the misreporting of significant amounts of revenues, expenses, liabilities, and assets. We found that though the BEA consolidation requirements are somewhat unusual from the perspective of corporate accountants, they are similar to those used by the Census Bureau and other statistical agencies and are not incomprehensible or impossible to fulfill, once they are adequately communicated. Insofar as critical FDI reporting requirements being located in separate instructions that tended to be overlooked by respondents, they were not effective in helping respondents to report correctly.

**Phase 2 – Redesign, Test, Revise, Test… Form Redesign and Cognitive Testing**

Our findings from the initial stage of background investigations informed the development of several specific and general recommendations for the redesign of the two forms. Our major recommendations included guidelines for more "respondent-friendly" formatting. Fundamentally, this involved using larger fonts and reducing the number of items per page to alleviate the crowded look of the forms and increase their readability. It also meant changing the format from legal-sized to letter-sized pages. We also recommended abandoning the separate instruction sections and instead placing instructions adjacent to and within relevant questions for easy reference (see Figure 2). Although these recommendations meant that the number of pages would increase, we thought this would be an acceptable trade-off for improving respondent understanding.

Additionally, we recommended that the most critical instructions regarding FDI consolidation and foreign affiliated entities be converted into questions, which respondents are not likely to ignore. For example, from the consolidation instructions we isolated key criteria and made from them a series of yes/no questions, to create a step-by-step process by which respondents might arrive at the correct reporting unit for the form (see Figure 3).

Our other major design innovation was the addition of small diagrams to enhance the comprehensibility of questions about affiliated entities (see Figure 3). We based these diagrams on the organizational charts that we found during our debriefing interviews were commonly used by respondents in preparing the BE-605 and other survey reports. Many of them referred to such "org" charts in our discussions of the survey reporting unit during the respondent debriefings, so we thought they might be a useful device for conveying those requirements.

We created drafts of redesigned sections of each form (not entire redesigned forms) to evaluate them. We selected the more problematic sections from each of the original forms, drawing upon the findings from both the respondent debriefings and analyst focus groups, and created redesigned mock-ups using a word-processing application.

We tested the mock-ups in cognitive interviews with actual respondents from the two surveys. Cognitive interviews (so named because they are based on Tourangeau's (1984) cognitive model of survey response) involve observing and probing respondents' reactions to survey items, with the aim of uncovering problems of comprehension and, in the context of establishment surveys, learning whether respondents have access to requested data and whether the data are encoded in company records. Cognitive pre-testing of establishment questionnaires generally takes place at business locations, in respondents' offices or in conference rooms, rather than in a laboratory setting typically used for pre-testing surveys of households and individuals. This is to accommodate the limitations of business respondents whose time is, after all, obligated to their employers and not to government survey researchers. These natural settings are much less controllable than cognitive testing laboratories, and researchers must often be somewhat flexible in covering all the topics in interview protocols. It is also difficult to get a respondent to retrieve and report actual data during a cognitive interview, which can require more time than that allotted for the interview and significant effort on the respondent's part. Thus, cognitive interviews do not always fully replicate authentic survey responses and the findings from them are therefore somewhat artificial. However, the technique is effective at uncovering problems with comprehension of survey items, retrieval of data, and judgment in reporting answers. For a discussion of the literature on cognitive interviews and other pre-testing techniques for establishment surveys see Willimack et al. (2004).

The cognitive testing stage was an iterative process in which we used the findings from one round to revise the test drafts, and then tested the modifications in the next round. We conducted a total of five rounds of cognitive interviews with respondents at approximately 60 companies nationwide. As in the first phase, BEA personnel selected companies for interviews based on the same considerations described earlier, and they also recruited some companies with more complicated corporate structures to better test redesigned questions about reporting units and ownership structure.

Overall, we found that the redesigned sections worked well. In the new format, the original content of the two surveys was found to be generally clear to respondents. Virtually all the respondents we interviewed preferred the more open design, although a few said they preferred the more compact original form (respondent preferences were investigated further in the next stage of the project, and are described later in the paper). Most respondents also preferred having instructions adjacent to relevant items. Several observed that this particular design innovation would lead to the form being longer (the original BE-605 was four legal-sized pages long, not counting the separate instructions, and the redesigned form is sixteen letter-sized pages), but most thought this would be an acceptable trade-off given the usefulness and convenience of not having to look elsewhere for more information on particular items.

Findings were mixed for another design innovation, the "organizational chart" diagrams used to modify instructions and questions (see Figure 3 for an example). Our intention was to use the diagrams to describe essential features of the various inter-company relationships. We initially hypothesized that respondents' familiarity with such diagrams would make them useful in translating the specifics of the surveys into terms they would understand. However, even the simpler of the diagrams we created tended to be complex, from a cognitive perspective, and we revised them continuously across all testing iterations to compensate for unanticipated problems. For example, terminology found in diagram labels must match that found in a corresponding question exactly, or else respondents may be distracted or confused (e.g., "U.S. affiliate" in one and "this U.S. affiliate" in the other). Even when terminology was consistent, some respondents tended to generate novel (and unintended) interpretations based on their selective focus on details that seemed to fit their own corporate structure, which often resulted in incorrect responses. It should be noted, though, that the diagrams worked well for simpler questions describing less-complicated ownership structures. See Tuttle and Morrison (2006) for a detailed description of this portion of the project.

Some items in the new sections created from key instructions proved difficult for respondents to comprehend – specifically, questions intended to convey FDI requirements for identifying and consolidating affiliated entities. Certain complicated and less common ownership conditions were difficult to reduce to key criteria, and became overly complicated when incorporated into questions. Although it was important to be able to clearly and simply describe these specific ownership conditions for the purposes of FDI reporting, in reality they apply only to a small minority of companies and were therefore confusing to most respondents. Also, while we found that most of the diagrams accompanying items in the new sections were fairly clear and were correctly interpreted by most respondents, the diagrams were unable to clarify the difficult questions, and only added to the confusion. These questions and their accompanying diagrams were extensively revised and refined. They were ultimately retained in the redesigned quarterly BE-605 form, but in one section of the annual form test draft, the series of questions and diagrams was abandoned for an alternative strategy using a single question and more elaborate instructions.

Overall, the cognitive testing stage was considered a success. This stage informed the development of a complete, redesigned BE-605 form[2]. The survey methodologists at the Census Bureau collaborated closely with BEA survey program personnel and with questionnaire design staff to resolve issues associated with portions of the form not included in the pre-testing, and we proceeded to the next phase, evaluating a redesigned BE-605 form in a pilot test.

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[2] The redesigned BE-605 form that is now in production can be downloaded from BEA's website: http://bea.gov/surveys/pdf/be605web.pdf. Note that on this version, background shading was removed in order to facilitate cleaner faxed copies, with the result that the white response fields do not stand out against the white page. With the exception of the removal of the background shading and some minor changes made following the pilot test, this is the version we evaluated in the final stage of the project.

**Phase 3 – Pilot Test of BE-605**

The final phase of the research project was centered around a pilot test of the redesigned BE-605 questionnaire. For the pilot test, BEA selected a sub-sample of companies to receive the new form as part of the regular data collection process, while the rest of the survey sample received the legacy form. The pilot test gave us advantages over the cognitive testing which, although extensive, was nevertheless limited by the somewhat artificial nature of the interview setting in that the intervention of an interviewer is not available to respondents completing a self-administered form. Moreover, the full final test version of the form was only evaluated with the members of the final testing round. The goals of pilot test, then, were to evaluate the redesigned form under "real world" conditions, that is, actually completed by respondents in the absence of an interviewer, and with a larger sample than could reasonably be obtained by conducting cognitive interviews alone. The role of the pilot test in our overall research plan was to assess the redesigned form in a larger, one-time "snapshot"; lacking the iterative aspect of cognitive testing, it would not be useful as a stand-alone method in developing a questionnaire.

We performed two types of evaluation[3] of the piloted form: The first evaluation was in the form of respondent debriefings, and the other involved four survey questions appended to the form asking respondents about their preferences for features of the new and legacy forms. The pilot form was mailed to a sub-sample of 657 current respondents to the legacy BE-605 survey, in June 2006. After eliminating those reporting electronically, the pilot sample was selected using a random process featuring unequal probabilities of selection devised by BEA survey personnel. This effectively created a moderate preference for selection of firms from large countries and industries in terms of magnitude of reported figures, and that were newer (see the appendix for a description of the sample design for the pilot test).

A letter included with the mail-out advised respondents that completing the pilot version of the form was voluntary, but if they decided not to do so they would still be required by law to respond to the survey using the old form, which they would have to request from BEA or download from BEA's website. Approximately 350 completed pilot forms were returned, a response rate of 53.8%.

Shortly after completed forms began returning to BEA, we conducted 23 respondent debriefing interviews (13 in person and 10 via telephone; again, the sample was selected purposively by BEA). The information from respondents at this stage largely echoed the findings from earlier testing. Most respondents had favorable impressions of the new form and the new design features. Most preferred the reformatted instructions, found the diagrams helpful, and thought the letter-sized pages were easier to handle. Some respondents cited drawbacks to the new form; several noted that the redesigned form was longer, and a few said that the stapled booklet format made the new form harder to fax. While these qualitative evaluations are not statistically verifiable, on the whole they suggest that the redesign was favorably received and that it may reduce the burden of completing the form.

Most respondents thought that the pilot form took longer to complete than the regular form, although we have reason to believe that this is because of their inexperience with the new format. Virtually all respondents reported that they completed the pilot form by looking at it side-by-side with their previous quarter BE-605 report and mapping the latter's items to the new locations and numbering on the redesigned form. Once they make this adjustment and completing the new form becomes routine then it should not take longer to complete, since none of the substantive questions were changed and the new questions are few and relatively simple to answer.

Some of the perceived increase in time of completion may have reflected time spent reading the instructions, which now were placed beside and within questions rather than being grouped together in a separate booklet, which could be easily overlooked. Those who said they read the instructions tended to do so because they wanted either to confirm that the content of the form had not changed or to ensure they knew how to complete specific items correctly. In so doing, a few respondents (even those with considerable prior experience in completing the BE-605) reported finding instructions they had not seen

[3] We attempted a third type of evaluation comparing error checks generated by BEA's automated data editing system for each form type. However, our findings were inconclusive due to definitional and sample design complexities.

before. Therefore, we hypothesize that the improved formatting and accessibility of instructions will make some respondents more likely to take the time to read them, and that data quality will improve as a result. It should be noted that the bulk of the burden associated with reading instructions tends to occur when companies are asked to complete the initial reports for the first of several consecutive reference periods for which they are sampled. That is, once respondents comprehend the specific data requests of a new survey, they document and establish retrieval routines that reduce the necessity of remembering and/or interpreting the requests anew with each subsequent survey form they receive. Once respondents invest this initial effort, retrieving data for later reports should become less burdensome. Insofar as some respondents read the pilot form's instructions and altered their reporting routines, they will not necessarily have to make a similar investment of time and effort in the future.

The next evaluation we performed involved the addition of four supplemental questions at the end of the redesigned questionnaire. These questions asked respondents for their opinions on the new look and formatting of the form, the insertion of instructions and diagrams into the form, and the ease or difficulty of completing the pilot form compared to the legacy form. This method allowed is to expand our debriefing of respondents well beyond the 28 cases interviewed personally.

Table 1[4] presents simple tabulations of responses to these questions; the numbers ranged from 279 to 290. Generally, the feedback received from the debriefing questions was positive. Table 1 shows that 79.3% of respondents to the supplemental questions answered that they liked instructions placed near the questions in

**Table 1.** Responses to evaluation questions included in pilot test draft.

| | Frequency | % |
|---|---|---|
| **1. This form put instructions near the questions, while the usual BE-605 put them in a separate document. In which location do you prefer to find the instructions?** | | |
| Near the questions, like this form | 230 | 79.3 |
| In a separate document, like the usual BE-605 | 53 | 18.3 |
| Not applicable — I haven't completed the usual BE-605 | 7 | 2.4 |
| **Total item responses** | 290 | 100.0 |
| **2. This form has more open space than the usual BE-605, and it requires more pages. The usual BE-605 has less open space and requires fewer pages. Which arrangement do you prefer?** | | |
| More open space and more pages, like this form | 136 | 48.7 |
| Less open space and fewer pages, like the usual BE-605 | 131 | 47.0 |
| Not applicable — I haven't completed the usual BE-605 | 12 | 4.3 |
| **Total item responses** | 279 | 100.0 |
| **3. This form used small organizational charts in questions 6 through 14. Which of the following statements best reflects how well these charts aided your understanding of the corresponding questions?** | | |
| The charts were somewhat or very helpful. | 185 | 65.4 |
| The charts helped only a little. | 33 | 11.7 |
| The charts were confusing. | 11 | 3.9 |
| I did not need the charts to help me understand the question. | 51 | 18.0 |
| **Total item responses** | 283 | 100.0 |
| **4. How much harder or easier was it to complete this form compared with the usual BE-605?** | | |
| A little or much harder | 145 | 50.5 |
| A little or much easier | 122 | 42.5 |
| Not applicable — I haven't completed the usual BE-605 | 20 | 7.0 |
| **Total item responses** | 287 | 100.0 |

[4] These data are descriptive of respondents only. It is not appropriate to draw inferences to the target population.

the new form, and 65.4% found the small "org charts" to be somewhat or very helpful. Respondents were evenly. Respondents were evenly split in their preferences for "more open space and more pages, like [the new] form" versus "less open space and fewer pages, like the usual BE-605," at 48.7% and 47.0%, respectively. Although 50.5% of respondents found the new form harder to complete, some noted in the open-ended remarks section that the additional difficulty arose from the new format, which broke their reporting routines. Like the respondents debriefed personally, they also said that as they become more familiar with the new form and establish new reporting routines, it would become easier. Thus it appears that findings from the supplemental questions tend to corroborate results from the personal respondent debriefing interviews.

Positive findings from our respondent debriefings lead us to hypothesize an overall reduction in reporting error for the redesigned questionnaire. Such an empirical evaluation was beyond the scope of our research and was not permitted by the design of our pilot test.

**Conclusions**

The field of establishment survey methodology poses particular challenges for its practitioners because of its position between two distinct areas: business financial accounting on one side, and economics on the other. Our role as methodologists at this intersection is often to bridge the gap between the two, and the authors' involvement in this project was especially challenging because of the concepts underpinning the BE-605 survey. Recognizing this fact early on, we went to great lengths to attempt to establish a thorough understanding of the intentions of the survey designers and the problems faced by the analysts in the course of data collection as they saw them. As we gained this knowledge from survey insiders (a process which never really ended), we then took up the task of understanding the perspectives of respondents to learn where the disconnects were between the two systems of knowledge, in order to address these gaps systematically in our redesign and attempt to bridge them.

The strength of our redesign lies in the multiple, complementary, and to some degree redundant methods of learning about the problems and of devising, evaluating, and revising solutions. Critical barriers to correct reporting were discovered and explored at length in the first phase of research, in the analyst focus groups, observations of telephone calls to respondents, and initial respondent debriefings. All of these methods contributed specific knowledge about the reporting issues, and each finding complemented and reinforced the others. Altogether, this knowledge, along with our experience with survey design and the expertise of BEA survey staff, gave us the means to devise potentially useful questionnaire design solutions. We went on to test our solutions quite extensively. Our iterative testing approach enabled us to make many fine adjustments and evaluate the design solutions, and we learned much, for example, about incorporating instructions and diagrams into questionnaires. Eventually, our testing led us to a completely redesigned survey form in which we had confidence, and the pilot test gave us the chance to perform a final evaluation of the form with a larger number of cases. It also permitted BEA to "handle" collected data from a subset of the sample before putting the form into production with thousands of cases, so that they could better prepare for implementation.

While we recommend the use of multiple research methods to aid questionnaire design, to the extent that survey resources allow, future research is needed to quantify the value of this approach on improving data quality and reducing respondent burden. For example, one would hypothesize that improved data quality would result in fewer edit failures. However, findings from our respondent debriefings suggest that this benefit may not be realized until respondents re-establish their reporting routines. The effect of the redesigned questionnaire on error rates may be assessed by comparing successive reports over a period of time to reports of the period immediately prior to the implementation of the new questionnaire.

Part of the success of this project lies in the confidence with which the survey managers put the redesigned form into production. Our role as researchers was to use our experience and knowledge of survey methodology to tap into survey analysts' knowledge by asking questions and relying heavily on their knowledge in the redesign of the form. In the process, the survey managers and some analysts were able to participate in the investigative and testing process, see the survey from respondents' perspectives, and understand their difficulties. The confidence they gained was a result of our multi-method approach, which

provided both corroborating and complementary findings across methods. Their first-hand experience with both the problems inherent in the original questionnaire, seen in new light, and the opportunities offered by the redesign process, led to the survey staff's full engagement as collaborators in the process rather than mere clients awaiting delivery of the final product. They were indispensable partners in the process, and have begun data collection with the new instrument with confidence in and in full ownership of the questionnaire.

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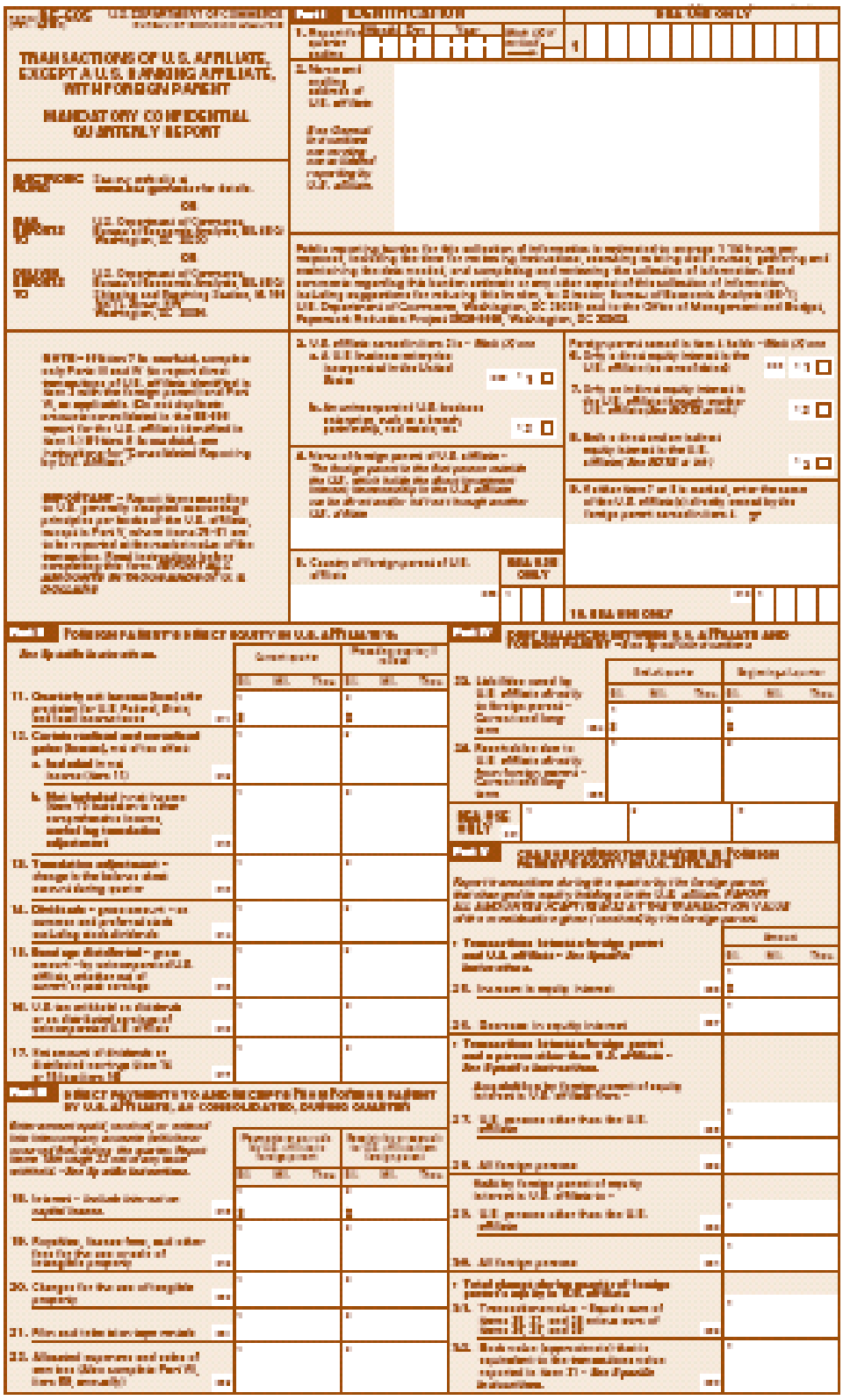
**Figures and Tables**

**Figure 1.** BE-605 legacy form, page 1. (actual size 8 ½ X 14")



TRANSACTIONS OF U.S. AFFILIATE, EXCEPT A U.S. BANKING AFFILIATE, WITH FOREIGN PARENT

MANDATORY CONFIDENTIAL QUARTERLY REPORT

**Figure 2.** Formatting of redesigned BE-605. Embedded instructions (left page and top right) adjacent to item (lower right).



**Instructions for Part III** — Foreign Parent's Direct Equity Share in the U.S. Affiliate, as Consolidated

**A.** Report the amount that represents the foreign parent's share, based on its direct holding of equity interest, in the U.S. affiliate's net income (loss) for the affiliate's fiscal year that ended with or within the foreign parent's fiscal year to which this report relates. Net income is after provision for all consolidated expenses, but BEFORE deduction for U.S. dividends, and excludes taxes.

- U.S. affiliates in extractive industries should report net income BEFORE depletion charges. EXCEPT charges representing the amortization of the actual cost of capital assets.

**B.** Please read the following instructions carefully as they are keyed to economic accounting concepts and to some cases may deviate from what is normally required by U.S. Generally Accepted Accounting Principles.

**B1.** Include gains (losses), resulting from:

- Sale or other dispositions of financial assets, including investment securities, FAS 115 holding gains (losses) on securities classified as trading securities, and FAS 115 investment losses. (Dealers in financial instruments (including securities, currencies, derivatives, and other financial instruments) and finance and insurance companies, see special instructions below.)
- Sale or disposition of land, other property, plant and equipment, or other assets, and FAS 144 impairment losses. Do not include gains (losses) from the sale of inventory assets in the ordinary course of trade or business. Real estate companies, see special instructions below.
- Goodwill impairment as defined by FAS 142.
- Restructuring costs that reflect write-downs or write-offs of assets or liabilities. Do not include actual payments of charges to establish reserves for future actual payments, such as for severance pay, and lease terminations, bonuses, or other commitments.
- Disposals of discontinued operations. Do not include income from the operations of a discontinued segment. Report such income in Item A.
- Remeasurement of the U.S. affiliate's foreign currency-denominated assets and liabilities due to changes in foreign exchange rates during the reporting period.
- Extraordinary, unusual, or infrequently occurring items that are material. Include losses from accidental damage or destruction, after expenditures for insurance reimbursement. Include other material items, including writedowns, and writeoffs of intangible assets and gains (losses) from the sale of other disposition of capital assets.

**B2.** Include, per FAS 130, unrealized holding gains (losses) for available-for-sale securities (including those classified as current assets), less reclassification adjustments, and minimum pension liability adjustments, after provision for U.S. Federal, State, and local income taxes. Do not include foreign currency translation adjustments; report translation adjustment in Item C.

**B1 –B2.**

Special instructions for dealers in financial instruments (including securities, currencies, derivatives, and other financial instruments), finance companies, and insurance companies:

Include in Item B1:

- realized gains (losses) on trading or dealing;
- unrealized gains (losses) due to changes in the valuation of financial instruments that flow through the income statement.

Include in Item B2 unrealized gains (losses) due to changes in the valuation of financial instruments that are taken to other comprehensive income.

Do not include income from fees and commissions in Items B1 or B2; report fees and commissions in Item A.

Special instructions for real estate companies – Report gains (losses) from the sale, disposition, or revaluation of land, other property, plant and equipment, or other assets as follows:

- Include realized gains (losses) from the sale of real estate in the ordinary course of trade or business in Item A; do not include these gains (losses) in Items B1 or B2.
- Include impairment losses of long-lived assets, as defined by FAS 121, and recognized during the period, in Items A and B1.

**Instructions for Part III** — Foreign Parent's Direct Equity Share in the U.S. Affiliate, as Consolidated – Continued

**C.** Report foreign parent's share of the foreign currency translation adjustment resulting from the translation of the foreign affiliate's financial statements from the affiliate's functional currency into U.S. dollars in accordance with FAS 52 or other current standards of the Financial Accounting Standards Board.

**D.** Report dividends as of the date they were declared or paid. DO NOT report any U.S. tax withheld. Any subsequent settlement of dividends declared but not paid should be reported in Item E. DO NOT should not be reflected only as a reduction in Item D.

- Exclude stock and liquidating dividends. Report liquidating dividends in Item B.

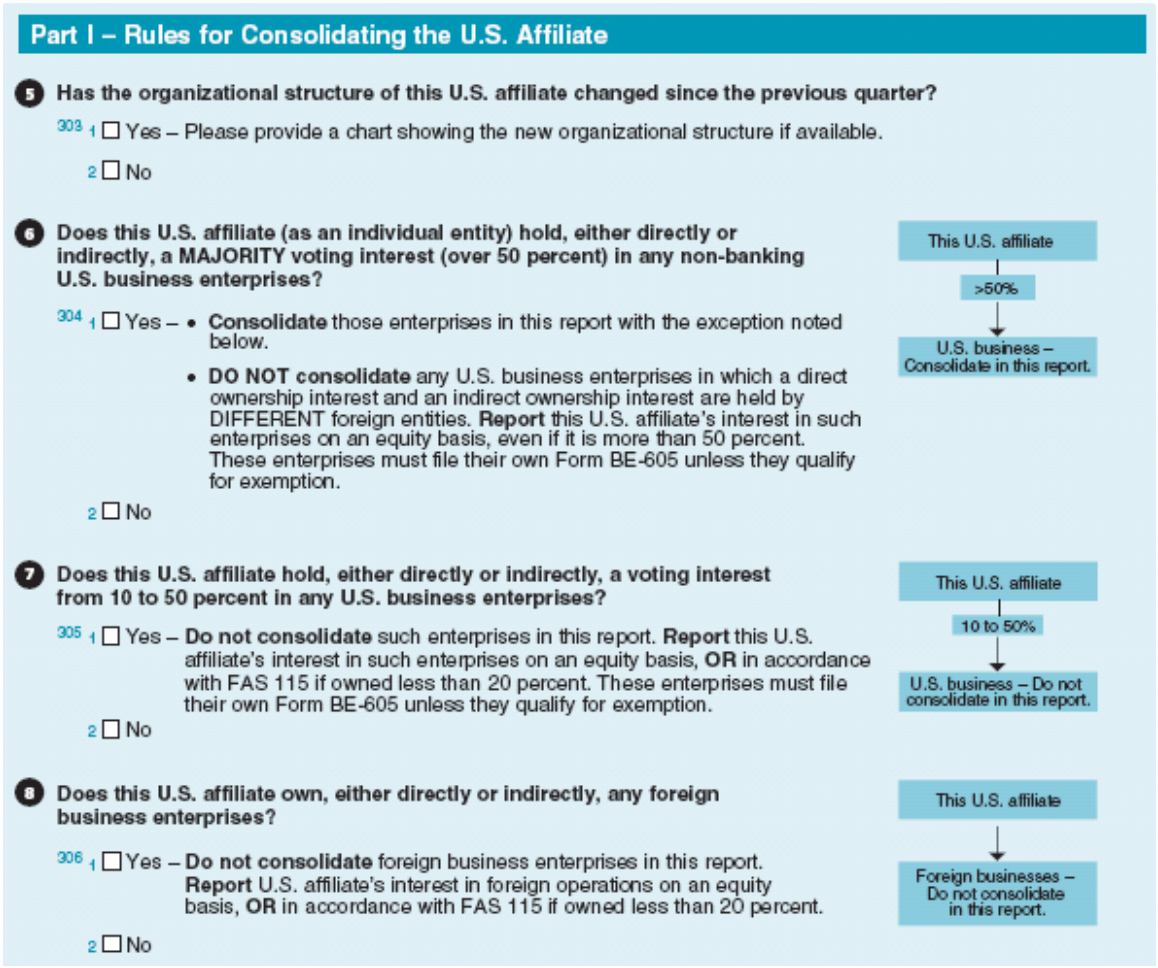
**E.** Report gross amounts of earnings distributed by unincorporated U.S. affiliates, whether out of current or past earnings.

**Part III – Foreign Parent's Direct Equity Share in the U.S. Affiliate, as Consolidated**

- Report items A–D on a quarterly basis. NOT on a cumulative or year-to-date basis.
- Use the column headed Preceding Quarter (if revised) to correct data that were incorrect or not given in the preceding quarter.
- Do not delay filing because current quarter data are not available. Estimates may be used where necessary to file a timely report.
- Do not complete this section if the foreign parent only holds an INDIRECT equity interest in the U.S. affiliate. Amounts representing this U.S. affiliate's equity accounts are part of another higher-tier U.S. affiliate's consolidated report.

| What is the foreign parent's share of: | Current Quarter | Preceding Quarter (if revised) |
|---|---|---|
| A. The U.S. affiliate's quarterly net income (loss), after provision for income taxes? | $ 000 | $ 000 |
| B. Certain realized and unrealized gains (losses), after provision for income taxes: | | |
| 1. Included in net income in Item A? | $ 000 | $ 000 |
| 2. Not included in net income in Item A but taken to other comprehensive income? | $ 000 | $ 000 |
| C. The CHANGE in the translation adjustment account during the quarter? | $ 000 | $ 000 |
| D. Dividends on common and preferred stock (gross of U.S. withholding taxes) excluding stock dividends? | $ 000 | $ 000 |
| E. Earnings distributed by unincorporated U.S. affiliates? | $ 000 | $ 000 |
| F. U.S. tax withheld on dividends (Item D) or on distributed earnings of unincorporated U.S. affiliates (Item E)? | $ 000 | $ 000 |
| G. The net amount of dividends/earnings distributed (Item D or E less Item F)? | $ 000 | $ 000 |

**Figure 3.** Formatting of redesigned BE-605. Consolidation instructions presented as survey items, with embedded instructions and organizational chart diagrams.



## Part I – Rules for Consolidating the U.S. Affiliate

**5** **Has the organizational structure of this U.S. affiliate changed since the previous quarter?**

303 1 ☐ Yes – Please provide a chart showing the new organizational structure if available.

2 ☐ No

**6** **Does this U.S. affiliate (as an individual entity) hold, either directly or indirectly, a MAJORITY voting interest (over 50 percent) in any non-banking U.S. business enterprises?**

304 1 ☐ Yes –
- **Consolidate** those enterprises in this report with the exception noted below.
- **DO NOT consolidate** any U.S. business enterprises in which a direct ownership interest and an indirect ownership interest are held by DIFFERENT foreign entities. **Report** this U.S. affiliate's interest in such enterprises on an equity basis, even if it is more than 50 percent. These enterprises must file their own Form BE-605 unless they qualify for exemption.

2 ☐ No



**7** **Does this U.S. affiliate hold, either directly or indirectly, a voting interest from 10 to 50 percent in any U.S. business enterprises?**

305 1 ☐ Yes – **Do not consolidate** such enterprises in this report. **Report** this U.S. affiliate's interest in such enterprises on an equity basis, **OR** in accordance with FAS 115 if owned less than 20 percent. These enterprises must file their own Form BE-605 unless they qualify for exemption.

2 ☐ No



**8** **Does this U.S. affiliate own, either directly or indirectly, any foreign business enterprises?**

306 1 ☐ Yes – **Do not consolidate** foreign business enterprises in this report. **Report** U.S. affiliate's interest in foreign operations on an equity basis, **OR** in accordance with FAS 115 if owned less than 20 percent.

2 ☐ No

**Appendix:** Sample Design and Selection for the BE-605 Pilot (prepared by Dan Yorgason, U.S. Bureau of Economic Analysis)

Each firm $i$ was assigned a number, $S_i$, between 0 and 1. Of these $S_i$, the top 700 were ultimately included in the sample. The assignment of the $S_i$ was made according to a random process, but with unequal probabilities of selection. Each $S_i$ was computed as

$$S_i = u_i^{(w_i / z_i)}$$

where

1) $u_i$ is a uniform random variable.

2) $z_i$ is the square of a weighted sum of the firm's shares of overall income (*INC*), debt position (*DP*), equity position (*EP*), and "newness" (*NEW*):

$$z_i = k\left[ .3DP_i \Big/ \sum DP_i + .75INC_i \Big/ \sum INC_i + EP_i \Big/ \sum EP_i + NEW_i \Big/ \sum NEW_i \right]^2,$$

where the first three terms use absolute values for each firm, and $k$ is a constant.

3) $w_i$ is determined according to the following random process:

$$w_i = \frac{\left(w_{ci} w_{ni} w_{vi}\right)^{\frac{3}{4}}}{\max_i \left[ \left(w_{ci} w_{ni} w_{vi}\right)^{\frac{3}{4}} \right]},$$

with $w_{ci}$ computed as $w_{ci} = \frac{o_{ci}}{\sqrt{N_c}}$, where $o_{ci}$ is the position of firm $i$ in a randomly ordered list of all firms from country $c$, and $N_c$ is the number of firms in country $c$. $w_{ni}$ and $w_{vi}$ are computed in the same manner as $w_{ci}$, but use NAICS industry and vintage rather than country.

As $u_i$ is between zero and one, the effect of raising this random variable to the $(1/z_i)$th power is to preference relatively large, new firms. The effect of the randomization described in 3) is to generate a likelihood of representation by each country, industry, and vintage. It also creates a moderate preference for selection of firms from large countries, industries, and vintages.