SUPPORTING STATEMENT
U.S. Department of Commerce
U.S. Census Bureau
OMB Control Number 0607-0104
Advance Monthly Retail Trade Survey

Part B. **Collection of Information Employing Statistical Methods**

1. Universe and Respondent Selection

The Advance Monthly Retail Trade Survey (MARTS) is a subsample of approximately 5,000 units (companies and EINs) selected from the larger Monthly Retail Trade Survey (MRTS) sample of about 12,000 units. The MARTS units are stratified by broader industry categories and substratified by annual sales size. There are 36 primary strata defined by industry. Within each industry stratum we stratify the sampling units into 4, 7, 10, or 13 substrata by a measure of size related to their annual sales. We select sampling units expected to have a large effect on the precision of the estimates "with certainty." This means they are sure to be selected and will represent only themselves (i.e., have a selection probability of 1 and a sampling weight of 1). To identify the certainty units, we determine a substratum boundary (or cutoff) that divides the certainty units from the noncertainty units. We base these cutoffs on a statistical analysis of data extracted from the Census Bureau's Business Register. We also use this analysis to determine the number and boundaries of noncertainty substrata for each industry group.

Sample sizes are calculated to meet hypothetical reliability constraints on estimated annual sales totals for specified industries. Sample selection is done independently within each size stratum using a systematic probability-proportional-to-size procedure where the size used is the MRTS sampling weight. Sampling weights range from 1 to 1,130, based on information from the current 2009 MARTS sample.

Every two and one-half to three years, the sample is re-selected. New businesses are not added to this sample. Therefore, as firms go out of business, refuse to respond, etc., the sample deteriorates and becomes less representative. By re-selecting the sample, it better represents current business conditions and many small and medium-size firms are relieved of the reporting burden. We are currently in the process of selecting a new MARTS sample, to be introduced in Spring 2013.

Advance sales estimates for the most detailed industries are computed using a link-relative estimator. For each detailed industry, we compute a ratio of current-to-previous month weighted sales using data from units for which we have obtained usable responses for both the current and previous month.

Then, for each detailed industry, the advance total sales estimate for the current month is computed by multiplying this ratio by the preliminary sales estimate for the previous month (derived from the larger MRTS) at the appropriate industry level. Total estimates for broader industries are computed as the sum of the detailed industry estimates.

The preliminary sales estimate used in this computation includes data for nonemployers (i.e. businesses without paid employees). Therefore, nonemployers are represented in the published MARTS estimates. The link-relative estimate is used because there is no sampling-unit level imputation or adjustment for nonrespondents in MARTS.

Variances are estimated using the method of random groups and are used to determine if measured changes are statistically significant.

Estimates are indirectly benchmarked to annual survey estimates via the link-relative estimation method.

Estimates are adjusted for seasonal variation and holiday and trading-day differences using the Census Bureau's X-13ARIMA-SEATS program. The X-13ARIMA-SEATS software improves upon the X-12-ARIMA seasonal adjustment software by providing enhanced diagnostics as well as incorporating an enhanced version of the Bank of Spain's SEATS (Signal Extraction in ARIMA Time Series) software, which uses an ARIMA model based procedure instead of the X-11 filter-based approach to estimate seasonal factors. The X-13ARIMA-SEATS and X-12-ARIMA software produce identical results when using X-13ARIMA-SEATS with the X-11 filter-based adjustments. The X-13ARIMA-SEATS software will be available from the Census Bureau's Internet site in the coming months.

Note that the MARTS estimates continue to be adjusted using the X-11 filter-based adjustment procedure.

Seasonal adjustment of estimates is an approximation based on current and past experiences. Therefore, the adjustment could become less precise because of changes in economic conditions and other elements that introduce significant changes in seasonal, trading-day, or holiday patterns.

There are no unusual problems requiring specialized sampling procedures.

2. Procedures for Collecting Information

On a monthly basis, questionnaires are mailed to respondents five working days before the end of the reference month. For respondents who have a fax number listed, a questionnaire is sent via fax to them on the last workday of the reference

month (other than Fridays). The sales estimates are collected by the National Processing Center in Jeffersonville, Indiana by the end of the seventh working day following the reference month. The data are tabulated, edited, analyzed, and reviewed on the seventh, eighth, and sometimes ninth working days.

The following chart provides response rates for the first month of each of the last 4 quarters. Dollar volume response represents the percent of total sales accounted for by response data. The unit response is represented by the total number of cases providing response data as a percent of the total cases eligible to report.

Data Month	Dollar Volume (% of Total Sales)	Unit Response (% of Total Eligible to Report)
April '12	64.1%	55.7%
January '12	63.8%	54.9%
October '11	64.8%	56.7%
July '11	63.6%	54.6%

Note that in prior Supporting Statement documents, we provided two measures of Unit Response: cases providing reported data as a percent of the total sample, and cases providing reported data as a percent of the total mailed. The Unit Response statistics in the table above (cases providing reported data as a percent of the total eligible to report) best reflect the Standard Response Rates of the Census Bureau.

3. Methods to Maximize Response

The following processes and initiatives for maximizing survey response were either maintained or developed in response to recommendations from the 2009 renewal:

- A laser printer facsimile machine connected to a toll free telephone line permits facsimile reporting to our collection facility on a 24-hour basis. The U.S. Census Bureau also provides a toll free telephone number for respondents to call in data or ask questions. The National Processing Center in Jeffersonville, Indiana performs telephone follow-up for all firms that have not responded by the due date, as well as those firms that have reported incomplete or questionable data.

- Special telephone follow-up is conducted each month for a limited number of respondents to get an extra week of sales data from companies that were excluded from the totals because the sales ending dates were

unacceptable. Unacceptable ending dates are those that fall too early or too late in the month and, therefore, do not represent the calendar month.

- Firms that refuse to respond to the survey are called in an attempt to convey to them the importance of the survey. This method fosters bilateral communication regarding potential obstacles to timely response, and develops relationships between analysts and company management.

- In the spring and summer of 2011, the U. S. Census Bureau conducted cognitive interviews with select respondents to elicit comments on the forms redesign for the upcoming new sample. The redesigned Census forms provided standardized terminology aligned to the way companies keep their books in an effort to simplify reporting and minimize response burden.

The following processes and initiatives will be implemented in the near future with the goal of further maximizing survey response:

- After compiling a list of firms having a high effect on the published estimates that were also refusing to report data, we contacted the Associate Director for Economic Programs, Mr. William G. Bostic, Jr. We consulted with Mr. Bostic and developed wording that emphasized the importance of reporting, and urged firms to begin or resume reporting. This wording was incorporated into letters from Mr. Bostic that will be sent to each firm appearing on the list. We expect some firms to begin or resume reporting in response to this effort. We plan to continue seeking the support of senior department executives to minimize non-response from firms of particular importance that are not currently reporting.

- In the second half of 2012, the U. S. Census Bureau will provide respondents with the option of reporting on-line using Centurion.

- In the fall of 2012, we will reset refusal companies' status and subsequently mail them forms in an attempt to gain support for the survey. We will make updates to the appropriate contact information fields, using updated respondent contact information from other Census Bureau collection efforts, which should yield a higher response rate amongst these firms.

- In 2013, the U.S. Census Bureau will introduce a new sample based on the results of the 2007 Economic Census, as well as subsequent company updates.

Nonresponse Bias Study

Per the terms of clearance from the 2009 renewal, Census Bureau staff conducted a nonresponse bias study for MARTS. Because of the inherent relationship

between MARTS and MRTS (OMB control number 0607-0717), we investigated the potential for nonresponse bias in sales estimates produced from MRTS and MARTS. The MRTS study also investigated the potential for nonresponse bias in end-of-month inventory estimates. We have excluded the end-of-month inventories results from this summary and focus only on monthly sales.

The primary findings from the MRTS nonresponse bias analysis are as follows. An analysis of the standard response rates for MRTS showed a large discrepancy between the certainty (larger company) and noncertainty (smaller company) response rates for all statistical periods in 2009. Additionally, these response rates varied by NAICS subsector. If the characterisics of interest (i.e., monthly sales and change in monthly sales) differ by size of company and/or kind of business, then there is potential for nonresponse bias in the estimates. A statistical comparison that examined whether characteristics from respondents differed from nonrespondents using data available on the sampling frame showed mixed results. Some tests detected differences in some industries, while other tests detected little or no differences. This is important because if the respondents can not be considered a representative sample of all sampled units in each imputation cell, then the missing at random assumption is violated. It should also be noted that because of the small sample sizes, the power of the tests to detect statistically significant differences between respondents and nonrespondents was limited. This study also included recommendations for investigating the method for defining imputation cells, assigning units to imputation cells, and calculating the imputation cell ratios.

Having completed the MRTS study, the MARTS nonresponse bias study was completed with several conclusions and recommendations. Among these were: (1) targeting nonresponse follow-up by industry and certainty/non-certainty status; (2) conducting a study that compares the current imputation methodology with nonresponse weight adjustment; and, (3) determining reasons for nonsampling error in MRTS by comparing MRTS, the Annual Retail Trade Survey (ARTS), and administrative data.

Note that initial research into #2 and #3 started in 2011. Early findings led us to revise some imputed data for MRTS nonrespondents (based on response in ARTS) with the benchmarking of the monthly retail estimates performed in spring 2012. Additionally, a list of research projects is being developed and prioritized based on the recommendations contained in these studies.

4. Testing of Procedures

We continuously edit the reported data and monitor procedures and methods for data collection in an effort to reduce reporting burden and improve data quality.

5. Contacts for Statistical Aspect of Data Collection

Questions regarding the sample design and statistical methodology used for this survey should be directed to William C. Davie, Jr., Assistant Division Chief for Research and Methodology, Service Sector Statistics Division, (301) 763-7182. Planning and implementation of this survey are under the direction of Karla Allen, Section Chief, Retail Indicators Branch, (301) 763-7208.

Attachments:

A: Forms SM-44(06)A, SM-44(06)AE, SM-44(06)AS, SM-72(06)A, SM-44(06)FA, SM-44(06)FAE, SM-44(06)FAS, and SM-72(06)FA

B: Letter MARTS-L1

C: Comment received from Bureau of Economic Analysis

D: Comment received from U.S. Department of the Treasury