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csvconvert: A simple command to gather comma-separated value files into Stata

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Abstract. This command meets the need of a researcher who holds multiple data files in comma-separated value format differing by a period variable (for example, year or quarter) or by a cross-sectional variable (for example, country or firm) and must combine them into one Stata-format file.

Keywords: dm0076, csvconvert, comma-separated value file, .csv

1 Introduction

In applied research, it is common to come across several data files containing the same set of variables that need to be combined into one file. For instance, in a cross-country survey, a researcher may collect information country by country and thus create several data files, one for each country. Or within the same cross-section (or even within the same country), the researcher may sample each year independently and generate various data files that differ by year.

A practical issue in this type of situation is determining how to read all of those files together in Stata, especially if they are manifold. The standard approach would be to import each data file sequentially into Stata by using a combination of `import delimited` and `append`. This approach, however, requires a user to type several command lines proportional to the number of files to be included; thus it is reasonably doable if the number of data files is limited.

Suppose the directory `C:\data\world_bank` contains three comma-separated value (.csv) files: `wb2007.csv`, `wb2008.csv`, and `wb2009.csv`.[1] After setting the appropriate working directory, a user implements the aforementioned procedure by typing the following command lines:

```
. import delimited using wb2008.csv, clear
. save wb2008.dta
. import delimited using wb2009.csv, clear
. save wb2009.dta
. import delimited using wb2007.csv, clear
```

---

1. `csvconvert` is designed to handle many .csv files; however, for simplicity, all the examples below consider a limited set of .csv files.

```
. append using wb2008.dta
. append using wb2009.dta
```

Alternatively, and more compactly, the same result can be obtained with a loop.

```
. foreach file in wb2007 wb2008 wb2009 {
  2. import delimited using `file´.csv, clear
  3. save `file´
  4. }
. foreach file in wb2007.dta wb2008.dta {
  2. append using `file´
  3. }
```

Another way is to work with the disk operating system (DOS) to gather all the .csv files into one .csv file and then to read the assembled single .csv file into memory using import delimited.

Under the DOS framework, the lines below assemble wb2007.csv, wb2008.csv, and wb2009.csv into a newly created .csv file named input.csv.

```
cd "C:\data\world bank"
copy wb2007.csv wb2008.csv wb2009.csv input.csv
```

To assemble all .csv files stored in the directory C:\data\world bank into a new file named input.csv, type

```
cd "C:\data\world bank"
copy *.csv input.csv
```

To read input.csv into Stata, type

```
. import delimited using C:\data\world bank\input.csv
```

A similar approach that bypasses the DOS framework can be implemented. However, if the number of .csv files is large, the process may not be as straightforward. For simplicity, let us still consider just three .csv files. Once the appropriate working directory is set, the command lines to type are as follows:

```
. copy wb2008.csv wb2007.csv, append
. copy wb2009.csv wb2007.csv, append
. import delimited using wb2007.csv
```

The first two command lines append wb2008.csv and wb2009.csv to wb2007.csv. The third command reads the .csv file into Stata.

Note, however, that if the first line of both wb2008.csv and wb2009.csv contains the variable names, these are also appended.[2] Thus, because of the presence of extra lines with names, all the variables are read as a string. To correct this inaccuracy, one should first remove the lines with the variable names and then use destring to set the numerical format.

---

2. Unfortunately, the option varnames(nonames), applicable with import delimited, is unavailable with copy.

Alternatively, we could prevent this fault by manually preparing the .csv files (that is, by removing the lines with the variable names in the .csv files to be appended). The whole process can be time consuming, especially if the number of .csv files is large. The csvconvert command simplifies and automatizes the procedure of gathering multiple .csv files into one .dta, as illustrated in the next section.

2   The csvconvert command

2.1   Syntax

The syntax is

csvconvert *input_directory*, replace [input_file(*filenames*)

   output_dir(*output_directory*) output_file(*filename*)]

where *input_directory* is the path of the directory in which the .csv files are stored. Do not use any quotes at the endpoints of the directory path, even if the directory name contains spaces (see example 1 below).

2.2   Options

replace specifies that the existing output file (if it already exists) be overwritten. replace is required.

input_file(*filenames*) specifies a subset of the .csv files to be converted. The *filenames* must be separated by a space and include the .csv extension (see example 2 below). If this option is not specified, csvconvert considers all the .csv files stored in the input directory.

output_dir(*output_directory*) specifies the directory in which the .dta output file is saved. If this option is not specified, the file is saved in the same directory where the .csv files are stored.

output_file(*filename*) specifies the name of the .dta output file. The default is output_file(output.dta).

3   Examples

3.1   Example 1—Basic

The simplest way to run csvconvert is to type the command and the directory path where the .csv files are stored followed by the mandatory option replace. In the same directory, Stata will create output.dta, which collects all the .csv files of that directory in Stata format.

```
. csvconvert C:\data\world bank, replace

-------------------------------------------------
The csv file wb2007.csv
(6 vars, 3 obs)
has been successfully included in output.dta

-------------------------------------------------
The csv file wb2008.csv
(6 vars, 3 obs)
has been successfully included in output.dta

-------------------------------------------------
The csv file wb2009.csv
(6 vars, 3 obs)
has been successfully included in output.dta

-------------------------------------------------
*****************************************************************
 You have successfully converted 3 csv files in one Stata file
*****************************************************************
```

3.2   Example 2—Subset of .csv files to be converted

If you want to convert only a subset of the .csv files in the directory (for example,
wb2008.csv and wb2009.csv), then you need to list the files to be converted inside the
parentheses of the option input_file(). Filenames must be separated by a blank space
and must be specified using the .csv extension.

```
. csvconvert C:\data\world bank, replace input_file(wb2008.csv wb2009.csv)

-------------------------------------------------
The csv file wb2008.csv
(6 vars, 3 obs)
has been successfully included in output.dta

-------------------------------------------------
The csv file wb2009.csv
(6 vars, 3 obs)
has been successfully included in output.dta

-------------------------------------------------
*****************************************************************
 You have successfully converted 2 csv files in one Stata file
*****************************************************************
```

Suppose you wish to name your output file wb_data and save it in the directory C:\data\wb dataset. In this case, you would type

```
. csvconvert C:\data\world bank, replace output_file(wb_data.dta)
> output_dir(C:\data\wb dataset)

-------------------------------------------------
The csv file wb2007.csv
(6 vars, 3 obs)
has been successfully included in wb_data.dta.dta

-------------------------------------------------
The csv file wb2008.csv
(6 vars, 3 obs)
has been successfully included in wb_data.dta.dta

-------------------------------------------------
The csv file wb2009.csv
(6 vars, 3 obs)
has been successfully included in wb_data.dta.dta

-------------------------------------------------
****************************************************************
 You have successfully converted 3 csv files in one Stata file
****************************************************************
```

3.4 Example 4—Including all possible options

Example 2 and example 3 can be combined.

```
. csvconvert C:\data\world bank, replace input_file(wb2008.csv wb2009.csv)
> output_file(wb_data.dta) output_dir(C:\data\wb dataset)
  (output omitted )
```

4 Tips and additional examples for practitioners

csvconvert is designed to speed up the process of joining a large number of .csv files. As the number of input files increases, the likelihood that one of them contains inaccuracies rises. It is important, therefore, to keep track of all the steps in the process so that the origin of possible faults can be detected.

While creating the output file, csvconvert offers various ways to check that the conversion of the .csv files into Stata has been completed correctly.

First of all, at the end of the process, csvconvert displays the number of .csv files contained in the output file. This information allows a researcher to check whether the expected number of .csv files to be included in the output file is equal to the actual number of .csv files that have been converted. The complete list of .csv files included in the .dta file can be obtained by typing note (see example 5). Additionally, by default, csvconvert creates one variable named _csvfile, which encloses the name of the .csv file where the observation originates.

During conversion, **csvconvert** sequentially reports the name of the .csv file being converted, the number of variables, and the number of observations. If something in the process appears odd, extra messages are displayed to alert the researcher and demand further inspection. For instance, suppose that one .csv file contains a symbol or a letter in one cell of a numerical variable; if ignored, this inaccuracy may undermine the whole process. For this reason, **csvconvert** adds a note to help the researcher detect the fault. In example 6, wb2008_symbol.csv contains "N/A" in one cell of the variable populationtotal.

4.1 Example 5—List of the .csv files included in the .dta file

Once **csvconvert** has been completed, the full list of .csv files included in the .dta file, together with the date and time when each .csv file was converted, can be obtained by typing note in the command window.

```
. note
_dta:
  1.  File included on 18 Jan 2014 10:11 : "wb2007.csv"
  2.  File included on 18 Jan 2014 10:11 : "wb2008.csv"
  3.  File included on 18 Jan 2014 10:11 : "wb2009.csv"
```

4.2 Example 6—Detecting the origin of anomalous observations

Suppose that you wish to convert three files: wb2007.csv, wb2008_symbol.csv, and wb2009.csv. The file wb2008_symbol.csv contains a fault (that is, the aforementioned "N/A" cell), but you are unaware of it.

```
. csvconvert C:\data\world bank, replace
> input_file(wb2007.csv wb2008_symbol.csv wb2009.csv)
-------------------------------------------------
The csv file wb2007.csv
(6 vars, 3 obs)
has been successfully included in output.dta
-------------------------------------------------
The csv file wb2008_symbol.csv
(6 vars, 3 obs)
(note: variable populationtotal was long in the using data, but will be str9
      now)
has been successfully included in output.dta
-------------------------------------------------
The csv file wb2009.csv
(6 vars, 3 obs)
(note: variable populationtotal was str9 in the using data, but will be long
      now)
(note: variable _csvfile was str10, now str17 to accommodate using data's
      values)
has been successfully included in output.dta
-------------------------------------------------
****************************************************************
 You have successfully converted 3 csv files in one Stata file
****************************************************************
```

By reading the log, you can see that in the conversion of wb2008_symbol.csv, the variable populationtotal changed its format from numerical to string. Therefore, wb2008_symbol.csv is the file that needs to be inspected. Once the anomalous observation is detected and manually corrected (for example, by emptying the anomalous cell via Excel and saving the corrected file as wb2008_symbol2.csv), you can relaunch csvconvert and check that it now runs smoothly.

```
. csvconvert C:\data\world bank, replace
> input_file(wb2007.csv wb2008_symbol2.csv wb2009.csv)

--------------------------------------------------
The csv file wb2007.csv
(6 vars, 3 obs)
has been successfully included in output.dta

--------------------------------------------------
The csv file wb2008_symbol2.csv
(6 vars, 3 obs)
has been successfully included in output.dta

--------------------------------------------------
The csv file wb2009.csv
(6 vars, 3 obs)
(note: variable _csvfile was str10, now str18 to accommodate using data´s
        values)
has been successfully included in output.dta

--------------------------------------------------
****************************************************************
 You have successfully converted 3 csv files in one Stata file
****************************************************************
```

4.3   Example 7—Spotting duplicate observations

If csvconvert happens to include duplicate observations (for instance, it inserted the same input file twice), it displays a warning message. Moreover, to facilitate the detection of double observations, csvconvert generates a new dummy variable, _duplicate, that is equal to one in case of duplicate observations. This example describes the procedure to spot whether an input file has been entered twice and, if so, which one.

```
. csvconvert C:\data\world bank, replace
> input_file(wb2008.csv wb2009.csv wb2008.csv)
-------------------------------------------------
The csv file wb2008.csv
(6 vars, 3 obs)
has been successfully included in output.dta

-------------------------------------------------
The csv file wb2009.csv
(6 vars, 3 obs)
has been successfully included in output.dta

-------------------------------------------------
The csv file wb2008.csv
(6 vars, 3 obs)
has been successfully included in output.dta

-------------------------------------------------
*****************************************************************
 You have successfully converted 3 csv files in one Stata file
*****************************************************************
Warning - output.dta has 3 duplicate observations: you might have entered a
> .csv file name twice in the input_file() option, or your orginal dataset may
> contain duplicates. Check if this is what you wanted: variable ´_duplicates´
> = 1 in case of duplicate and = 0 otherwise may help.
```

The warning message shows that there are three duplicate observations. Of course, you can look carefully at the Results window and find that wb2008.csv was entered twice. However, if you are handling a large set of .csv files, checking each line of the screen would be very time consuming.

Tabulating the variable _csvfile conditional on _duplicates being equal to one quickly detects that the duplicate observations come from wb2008.csv.

```
. tabulate _csvfile if _duplicates==1

    csv file
  from which
 observation
  originates         Freq.       Percent        Cum.

  wb2008.csv             6        100.00      100.00

       Total             6        100.00
```

5   Acknowledgments

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