

## 2.1 Executive Summary

My friend needed to download and save separate reports as excel files from the FDIC website. The challenge was that they are dynamic pages. The program had to go through steps online to retrieve each report. For my project I automated this process for him.

The FDIC site offers statistics on depository institutions. You can generate historical reports by going to <http://www2.fdic.gov/SDI/main.asp> and going through 12 steps including selecting radio buttons, selecting check boxes, and navigating through pages. Then you can save the report to Excel. Because a large number of reports needed to be generated, this process was time consuming and cumbersome.

I found a really cool way of automatically generating and saving these reports using VBA. A major part of the solution was discovering that each of the steps to generate a report doesn't actually take you to a new web page (even though it appears to). Each "new page" was actually just part of a form that adds the variables you select to create a final URL for the report. So I drilled down to the code on the webpage to identify what the URL of one of the final report looks like (shown below).

```
"http://www2.fdic.gov/SDI/download_exect.asp?selInFlags=None&selections=28000%2CSZLNCRCD%2C
SZLAUTO%2CSZ30CRCD%2CSZ30AUTO%2CSZ90CRCD%2CSZ90AUTO%2CSZDRCRCD%2CSZDRAUTO%2Cs
uccrcd%2Cszuauto&selInReportDate=12%2F31%2F2009&IncomeBasis=&NumOfRpts=59&repincbas0=
&repincbas1=&repincbas2=&repincbas3=&repincbas4=&repincbas5=&repincbas6=&repincbas7=&repin
cbas8=&repincbas9=&repincbas10=&repincbas11=&repincbas12=&repincbas13=&repincbas14=&repinc
bas15=&repincbas16=&repincbas17=&repincbas18=&repincbas19=&repincbas20=&repincbas21=&repi
ncbas22=&repincbas23=&repincbas24=&repincbas25=&repincbas26=" & _
"&repincbas27=&repincbas28=&repincbas29=&repincbas30=&repincbas31=&repincbas32=&repincbas3
3=&repincbas34=&repincbas35=&repincbas36=&repincbas37=&repincbas38=&repincbas39=&repincbas
40=&repincbas41=&repincbas42=&repincbas43=&repincbas44=&repincbas45=&repincbas46=&repincb
as47=&repincbas48=&repincbas49=&repincbas50=&repincbas51=&repincbas52=&repincbas53=&repinc
bas54=&repincbas55=&repincbas56=&repincbas57=&repincbas58=&repincbas59=&SQL=SELECT+stru.C
ert%2Cstru.MSA+from+risstru+stru" & _
"++where+stru.Active+%3D+1+++++++and+stru.repdt+%3D+%27" & Replace(CStr(DateAdd("q",
quarters, CDate(theDate))), "/", "%2f") & "%27++order+by+stru.NAME+&submitButton2=submit"
```

By manipulating this URL I generated the correct reports. As an example of how this works, look at the variables that follow %2C such as %2CSZLNCRCD and %2CSZLAUTO. By including these variables in the URL I indicated that I want the report to include bank securitization activities in relation to the banks' principle balances for credit cards and auto loans (CRCD = credit card & AUTO = auto loans). If that doesn't make a lot of sense, then hopefully the project write up will clarify it.

With the URL for the information I needed, I used VBA code to save the data as an excel file. Then I used a loop to automatically change the date of the quarterly report (Replace(CStr(DateAdd("q", quarters, CDate(theDate)))) and save the reports going back 5 years.

## 2.2 STEP BY STEP

### Permission to Download

If the FDIC website expressly prohibits programs from automatically accessing data, then we shouldn't continue with this project. The statement “# robots.txt for [www.fdic.gov](http://www.fdic.gov) # Dec 3, 1998 User-agent: \* Disallow: /\_vti\_bin/ #bypassed to eliminate crawlers for getting into image maps” lets us know that it is legal to get information from <http://www2.fdic.gov/SDI/main.asp>. So we proceed.

### A View of the Site

The following screen shots give a visual of what the FDIC site looks like and some of the steps that need to be taken online to generate a desired report. This first screenshot shows the starting point on the website. At this point I need to select SDI Map, Definitions and Data Download.

The screenshot shows the FDIC website's 'Create or Modify Reports' page. At the top is the FDIC logo and a navigation bar with links: HOME, DEPOSIT INSURANCE, CONSUMER PROTECTION, INDUSTRY ANALYSIS, REGULATION & EXAMINATIONS, ASSET SALES, NEWS & EVENTS, and ABOUT FDIC. Below this is a section titled 'Statistics on Depository Institutions' with a sub-menu: SDI Home, Create or Modify Reports, Retrieve Reports, Peer Groups, SDI Map, Definitions and Data Download, Disclaimer and Notes, ID Home, and SDI Help. The main content area is titled 'Create or Modify Reports' and includes a link to 'Retrieve Predefined Standard Reports'. Below this are options to 'Create' or 'Retrieve' custom reports. A dropdown menu for 'Select the type of reports:' is set to 'Dollars/Percent of Assets', and a dropdown for 'Select the number of Columns:' is set to '4'. There are four 'Reset Criteria' buttons and a 'Clear All' button. A 'Next' button is highlighted in yellow. At the bottom, there are links for 'Questions, Suggestions & Requests' and a footer with various site links including Home, Contact Us, Search, Help, SiteMap, Forms, Freedom of Information Act (FOIA) Service Center, Website Policies, USA.gov, and FDIC Office of Inspector General.

On the next page I need to select the Data Download radio button and select Next.

The screenshot shows the FDIC website's 'Please make a selection' page. It features the same FDIC logo and navigation bar as the previous page. Below the 'Statistics on Depository Institutions' section, there is a message: 'Please make a selection and click Next button to continue.' Below this message are two radio button options: 'Data Download' and 'SDI SiteMap and Definitions'. The 'Data Download' option is selected. A yellow 'Next' button is located at the bottom right of the page.

### Commitments for Credit Card Receivables and Auto Loans.

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The following page asks me to select the date (available by quarter) of the report I desire from the dropdown menu next to "Information as of:". For the project, I want VBA to retrieve a separate report for each quarter from March 31, 2005 to December 31, 2009.

The screenshot shows the FDIC website's "Statistics on Depository Institutions" section. The "Download Selection" form includes fields for "FDIC Certificate #", "OTS Docket #", "Institution Status" (set to "Active (Open)"), "Information as of" (set to "December 31, 2009"), "Institution Name", "City", "County", "State" (with a dropdown menu showing "Anywhere in U.S.", "Alabama", "Alaska", "American Samoa", and "Arizona"), "Zip Code", and "Sort By" (set to "Bank Name"). Below these fields are "Specialized Categories (FAQ)" with various filters: "Established" (with "After Date" and "Before Date" sub-sections), "Size or Performance" (with "None", "Equal or Greater Than", and "Equal or Less Than" options), "Asset Concentration Hierarchy", "Institution Type", "Bank Charter Class", "Chartering Agency", and "Federal Regulator".

Finally, after selecting the criteria for the download, it will open an excel file with the report so I can proceed to save it. After saving, I need to go back and download another report for the next quarter, and the next quarter, and so on.

The screenshot shows the "Download Selection Criteria Confirmation" page. It states that 8021 institutions were found matching the selection criteria and that the approximate size of the downloaded file is 1,288,236 bytes. The selection criteria are listed as: "Sort Order" (order by NAME), "Institution Status" (Active), and "Report Date" ('12/31/2009'). Below this information are buttons for "Download", "Change Criteria", and "Start Over". At the bottom of the page, there are links for "Home", "Contact Us", "Search", "Help", "SiteMap", "Forms", "Freedom of Information Act (FOIA) Service Center", "Website Policies", "USA.gov", and "FDIC Office of Inspector General".

## The Solution

By viewing the source code of the Download Selection Criteria Confirmation page, I identified a way to get to that final download page by creating a unique URL. It turns out that the variable names given on the right column under "Variable" on the Custom Report Selections for Download page are the variable names that are placed within the URL to generate a report with those variables (as noted earlier).

## The Magic Code

Now that you have an idea about what I'm trying to accomplish, let's examine my code (it's short). I tried several different ways that I won't include here, but the following fdic2 sub procedure works best. Explanations of the lines are in green.

```
Sub fdic2()
```

```
    Dim url As String
```

```
    Dim quarters As Integer
```

```
    Dim theDate As String
```

```
    Dim fileName As String
```

```
    quarters = "0" ' -4 quarters is 12/31/2008 and 0 quarters = 12/13/2009
```

```
    fileName = "0" ' I need to save 25 files so I need to automatically change the file name
```

```
    theDate = "12/31/2009" ' I'm going to start with this date (it goes in the URL to generate a report for that date)
```

```
    Do Until quarters = "-24" 'Goes back 24 quarters in time
```

```
        initializeIE True 'Open IE Browser
```

```
        url =
```

```
"http://www2.fdic.gov/SDI/download_exect.asp?sellnFlags=None&selections=28000%2CSZLNCRCD%2CSZLAUTO%2CSZ30CRCD%2CSZ30AUTO%2CSZ90CRCD%2CSZ90AUTO%2CSZDRCRCD%2CSZDRAUTO%2Cszuccrcd%2Cszucauto&sellnReportDate=12%2F31%2F2009&IncomeBasis=&NumOfRpts=59&repincbas0=&repincbas1=&repincbas2=&repincbas3=&repincbas4=&repincbas5=&repincbas6=&repincbas7=&repincbas8=&repincbas9=&repincbas10=&repincbas11=&repincbas12=&repincbas13=&repincbas14=&repincbas15=&repincbas16=&repincbas17=&repincbas18=&repincbas19=&repincbas20=&repincbas21=&repincbas22=&repincbas23=&repincbas24=&repincbas25=&repincbas26=" & _
```

```
"&repincbas27=&repincbas28=&repincbas29=&repincbas30=&repincbas31=&repincbas32=&repincbas33=&repincbas34=&repincbas35=&repincbas36=&repincbas37=&repincbas38=&repincbas39=&repincbas40=&repincbas41=&repincbas42=&repincbas43=&repincbas44=&repincbas45=&repincbas46=&repincbas47=&repincbas48=&repincbas49=&repincbas50=&repincbas51=&repincbas52=&repincbas53=&repincbas54=&repincbas55=&repincbas56=&repincbas57=&repincbas58=&repincbas59=&repincbas60=&repincbas61=&repincbas62=&repincbas63=&repincbas64=&repincbas65=&repincbas66=&repincbas67=&repincbas68=&repincbas69=&repincbas70=&repincbas71=&repincbas72=&repincbas73=&repincbas74=&repincbas75=&repincbas76=&repincbas77=&repincbas78=&repincbas79=&repincbas80=&repincbas81=&repincbas82=&repincbas83=&repincbas84=&repincbas85=&repincbas86=&repincbas87=&repincbas88=&repincbas89=&repincbas90=&repincbas91=&repincbas92=&repincbas93=&repincbas94=&repincbas95=&repincbas96=&repincbas97=&repincbas98=&repincbas99=&repincbas100=" & _
```

as47=&repincbas48=&repincbas49=&repincbas50=&repincbas51=&repincbas52=&repincbas53=&repincbas54=&repincbas55=&repincbas56=&repincbas57=&repincbas58=&repincbas59=&SQL=SELECT+stru.Cert%2Cstru.MSA+from+risstru+stru" & \_

"++where+stru.Active+%3D+1+++++++and+stru.repdte+%3D+%27" &  
Replace(CStr(DateAdd("q", quarters, CDate(theDate))), "/", "%2f") &  
"%27++order+by+stru.NAME+&submitButton2=submit"

This URL creates the report I desire and I use the "quarters" and "theDate" variables to generate 24 more reports with 24 different dates.

ie.navigate url 'Go the URL I just defined.

'By going to this URL it goes straight to the report I need.

'This block waits until the download dialog pops up

On Error Resume Next

Do

Sleep 5000

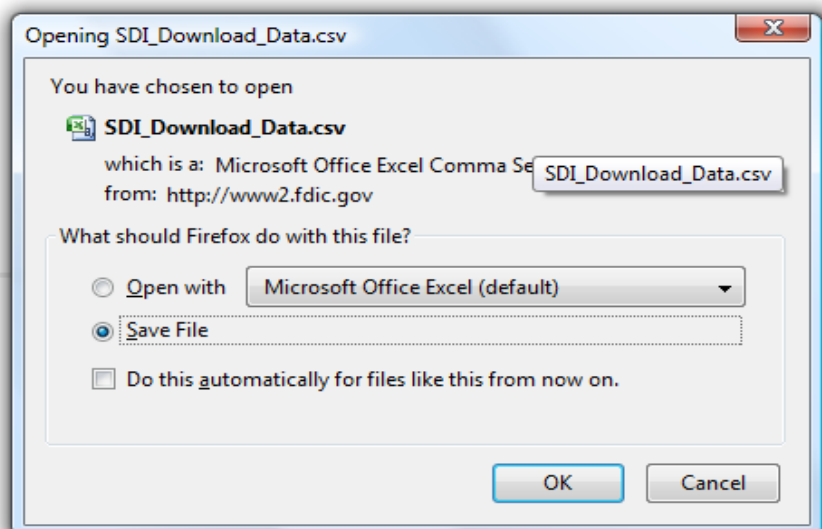
Err.Clear

AppActivate "File Download"

Loop Until Err.Number = 0

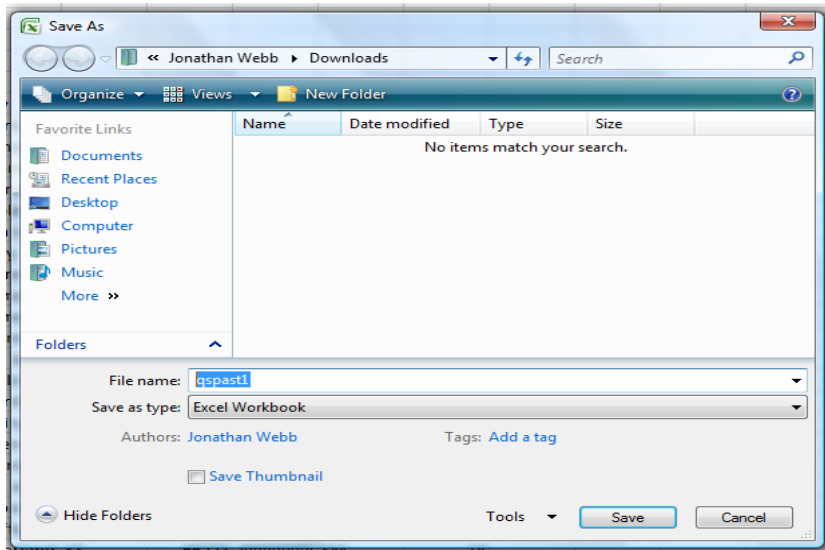
On Error GoTo 0

'At this point I know the download box is open



SendKeys "%s"

Sleep 500 'Wait till Save As opens



SendKeys ThisWorkbook.path & "\qspast" & fileName & ".csv" 'save as qspast1.csv dqspast2.csv and so on. This is how I generate new names to save 25 files with.

SendKeys "%s" 'Save

Application.Wait Now + TimeValue("00:00:15") 'Give it time to save because I'm gonna run it again on the next quarter.

quarters = quarters - 1 'This changes the date so I can get the next report when it loops.

fileName = fileName + 1 'This changes that name I will use to save the next report when it loops.

Loop

End Sub

## Outputs

The screenshot below gives you a sample of the fascinating data output. Each of the 25 reports has over 8000 rows of data. The column headings are self explanatory except the optional report variables that we selected. Those headings use the variable code names, so it is helpful to refer to the Custom Report Selections page to understand what each of those codes represent. After spending this amount of time on the project, I know what they represent by heart.

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## 2.3 What I learned by going through this project.

It is far better to identify a good approach at solving the problem rather than just trying stuff. I tried to get this data using the data tab in excel and using the 'From Web' button on the ribbon that opens a browser that excel uses to import data from the web. I spent a lot of time trying to figure it out, and it turns out that it doesn't have the capability to solve this problem. Then we learned about viewing source code, and I realized that I could program excel to open a browser and automatically navigate to the reports I desired. Then it became fun and exciting instead of frustrating.

It's a good idea to use a search engine to see how other programmers are tackling similar problems (unless you're taking a final).

VBA loops can save you a lot of work, a lot of boring redundant work. A good approach to setting up a loop is to first program it to do the task once, and then loop it using variables that change at each iteration.