Westpac GROUP

EST. 1817

GENERATING DYNAMIC INTERFACES

&

AUTOMATING DATA EXTRACTION

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SAS New South Wales User Group (SNUG) – 22nd May 2014

Audience Participation

Objectives

The focus of our presentation will be on:

1. Background
2. Benefits of using a dynamic interface
3. SAS interaction with Microsoft Excel
4. Automating data updates
5. Tips & tricks
6. Questions

Disclaimer:
Note that the views expressed in this presentation are the views of the authors and do not necessarily reflect the views and opinion of Westpac in any way.

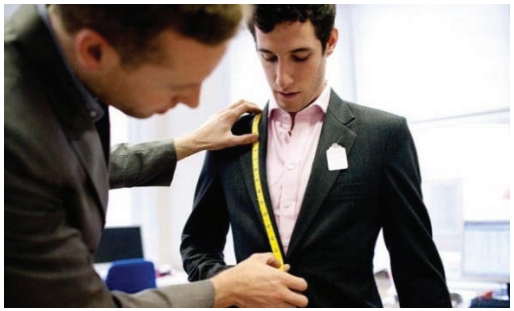
Background

Purpose

To get information from external sources in a quick and efficient manner, which is readily available for business use

Dynamic Interface

A tool allowing users to obtain any data they need, displayed in any way they want, as often as they like. In other words- tailor made to suit your needs!



Benefits of using a Dynamic Interface

The advantages of using interfaces with automation to link data and insights are:

1. Alleviating stress
2. Reducing human error
3. Simplifying processes
4. Mitigating operational risks and reducing business costs
5. Improving response times to business stakeholders
6. Allows greater focus on insights and analysis

Dynamic interfaces are even better as they provide greater flexibility for users

SAS Interaction with Microsoft Excel – Part 1 (Process Flow)

Step 1

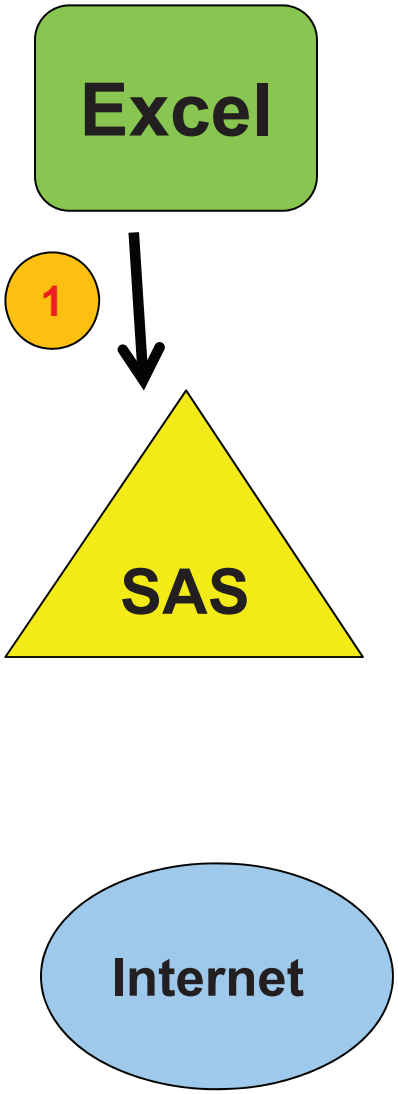
– Excel 'pushes' data to SAS and kick-starts SAS programs

I. Define your data in terms of Named Ranges in Excel

II. Establish connection between SAS and Excel

III. Write to SAS tables and submit code from Excel

Note that when the SAS connection closes, all temporary files are deleted



SAS Interaction with Internet – Part 1 (Process Flow)

Step 2

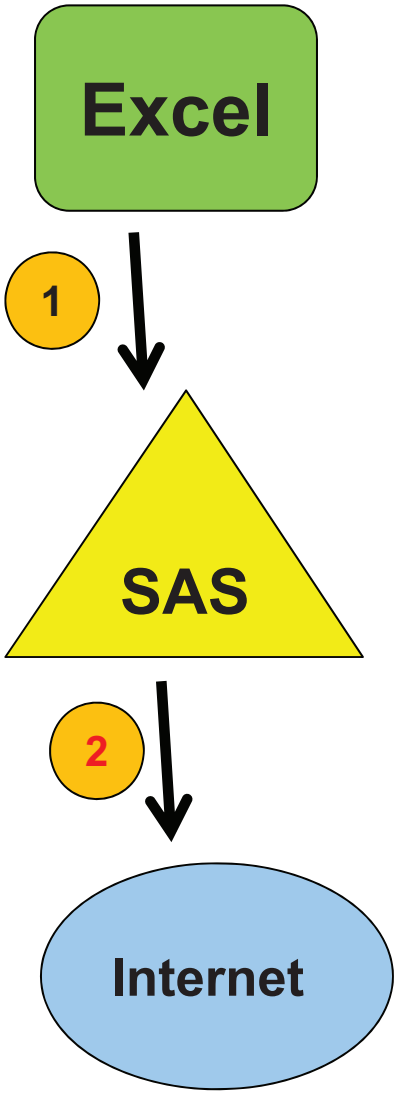
– SAS queries the internet using data 'pushed' to SAS

- **Filename** web **url** "<website>" recfm = <> lrecl = <> proxy= <>;

  (Data in <> obtained from Step 1)

- Direct download for nearly all file types including Rich Site Summary (RSS)

  Requires an XML map to read data from HTML to SAS
  (free software available online)

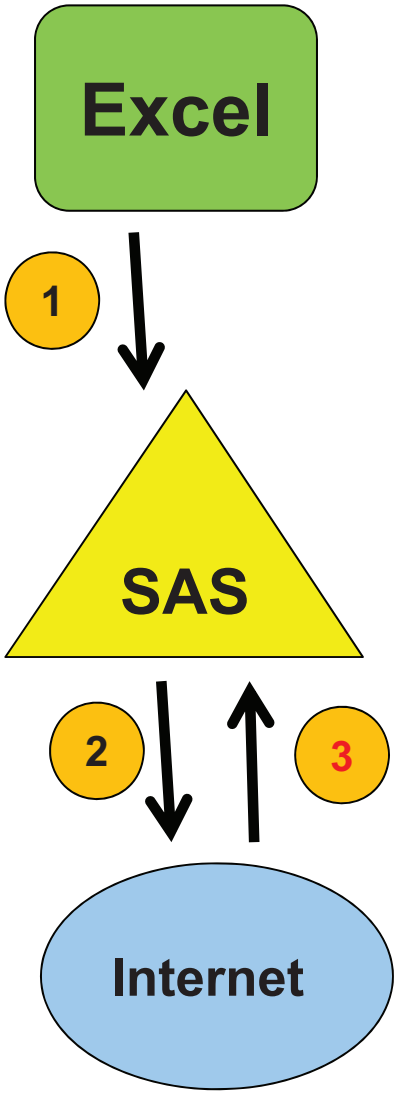


SAS Interaction with Internet – Part 2 (Process Flow)

Step 3

– Internet responds by sending back data

- **Filename** local “<file hyperlink>” recfm = <> lrecl = <>;
- **Formatting and cleansing** data for use

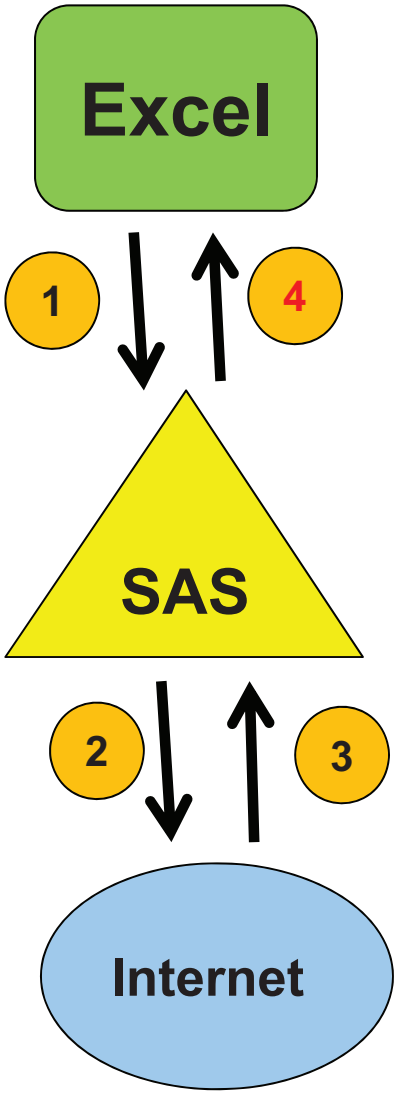


SAS Interaction with Microsoft Excel – Part 2 (Process Flow)

Step 4

– Excel ‘pulls’ data from SAS and displays on Dashboard

- **SAS Add-in** for Microsoft Office and Pivot Tables



Automating Data Updates (Interface - Illustration)

Input Data Sources

Proxy Server

Location	Host	Port	UNIX Username	UNIX Password
Westpac	<internal proxy server>	<port no>	<username>	<password>

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Update Direct Download

Update RSS

Output

Location	TableName
<output library>	<output file name>

Website Direct Download

Number	Detail	Website	WorkbookName	WorksheetName	ColumnDateName	ColumnValueName	OutputValueName	DateUpdated
1	RBA Cash Rate	http://www.rba.go	f01hist	Data	'F1 INTEREST RATES AND YIELDS	f5	Cash_rate_90_days	22/05/2014
2	Gross Domestic Product	http://www.rba.go	g10hist	Data	'G10 GROSS DOMESTIC PRODU	f2	Gross_Domestic_Produ	22/05/2014
3	Consumer Price Index	http://www.rba.go	g02hist	Data	'G2 CONSUMER PRICE INDEX'n	f2	Consumer_Price_Index	22/05/2014
4	Unemployment Rate	http://www.rba.go	g07hist	Data	'G7 LABOUR FORCE'n	f9	Unemployment_Rate	22/05/2014

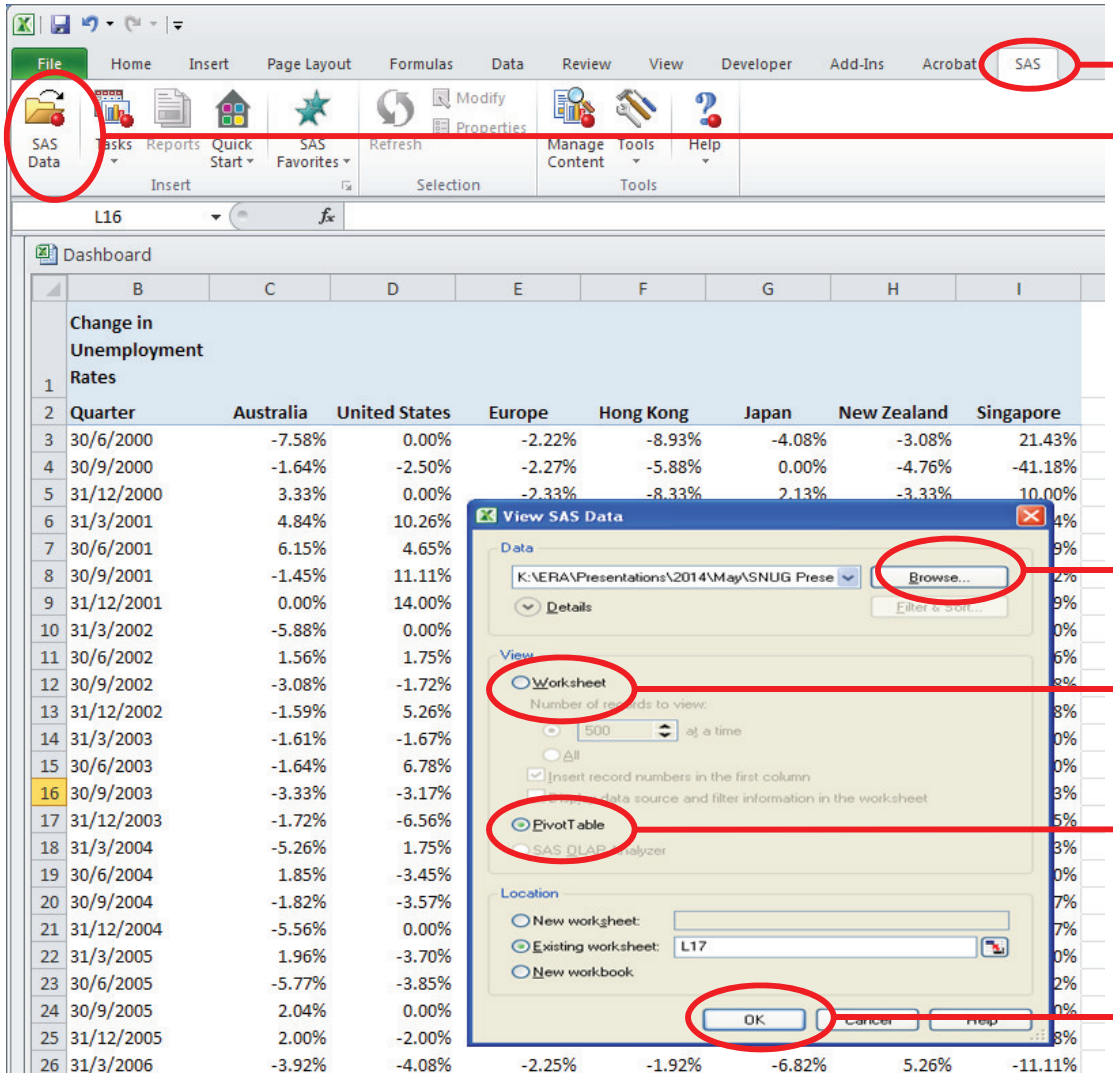
Website Rich Site Summary (RSS) Download

No.	Detail	Website	XMLMap	DateUpdated
1	Foreign Currency Exchange Rates	http://www.rba.go	<text file with xml map>	22/05/2014

Automating Data Updates (Interface - Components)

No.	Macro	Code
1	Initialize	libname _all_ clear; %include 'C:\Documents and Settings\Initialize.sas'; %let user= <username>; %let pwd = <password>; %let server = <internal proxy server>:<port no>; %put &user. &pwd. &server. global;

Automating Data Updates (Interface - Data)



Quarter	Australia	United States	Europe	Hong Kong	Japan	New Zealand	Singapore
30/6/2000	-7.58%	0.00%	-2.22%	-8.93%	-4.08%	-3.08%	21.43%
30/9/2000	-1.64%	-2.50%	-2.27%	-5.88%	0.00%	-4.76%	-41.18%
31/12/2000	3.33%	0.00%	-2.33%	-8.33%	2.13%	-3.33%	10.00%
31/3/2001	4.84%	10.26%					4%
30/6/2001	6.15%	4.65%					9%
30/9/2001	-1.45%	11.11%					2%
31/12/2001	0.00%	14.00%					9%
31/3/2002	-5.88%	0.00%					0%
30/6/2002	1.56%	1.75%					6%
30/9/2002	-3.08%	-1.72%					8%
31/12/2002	-1.59%	5.26%					8%
31/3/2003	-1.61%	-1.67%					0%
30/6/2003	-1.64%	6.78%					0%
30/9/2003	-3.33%	-3.17%					3%
31/12/2003	-1.72%	-6.56%					5%
31/3/2004	-5.26%	1.75%					3%
30/6/2004	1.85%	-3.45%					0%
30/9/2004	-1.82%	-3.57%					7%
31/12/2004	-5.56%	0.00%					7%
31/3/2005	1.96%	-3.70%					0%
30/6/2005	-5.77%	-3.85%					2%
30/9/2005	2.04%	0.00%					0%
31/12/2005	2.00%	-2.00%					8%
31/3/2006	-3.92%	-4.08%	-2.25%	-1.92%	-6.82%	5.26%	-11.11%

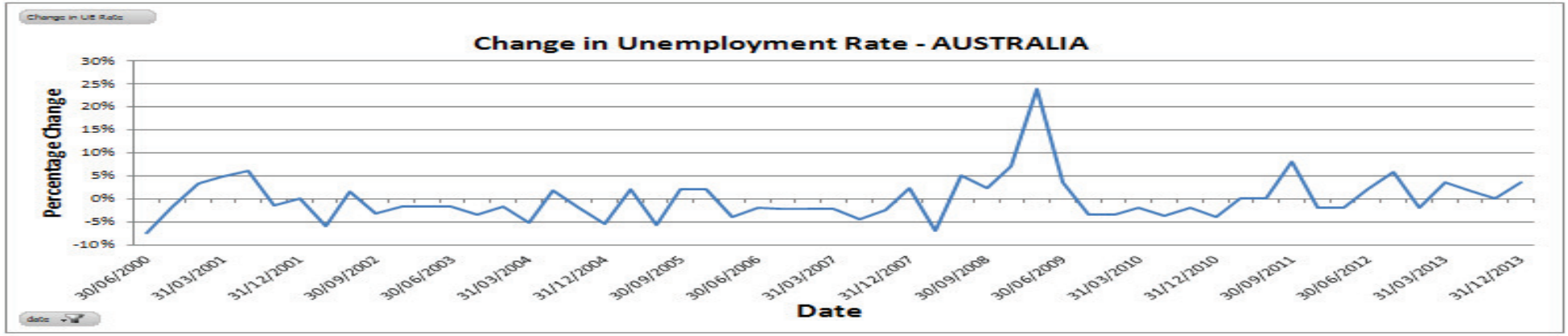
1. Click on the “SAS” tab
2. Select “SAS Data”
3. Click “Browse” and find the location of your SAS output set
4. Choose to show the SAS output either in full form in a worksheet or summarised in a pivot table
5. Click OK!

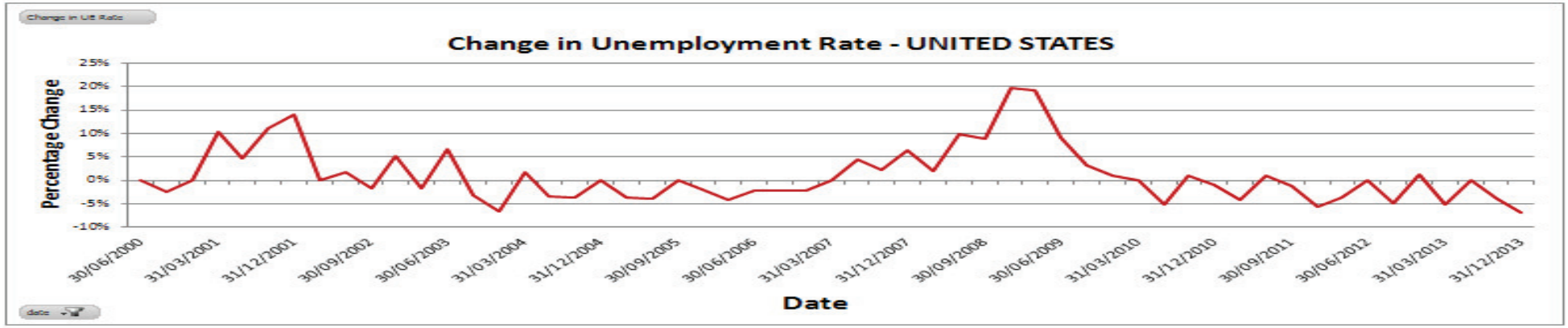
Automating Data Updates (Interface - Results)

Results

Comparisons

No.	Country	Economic Indicator	Value
1	Australia	Unemployment Rate	Change
2	USA	Unemployment Rate	Change





Tips & Tricks

We have included some useful tips & tricks to assist with troubleshooting issues.

No.	Tip & Trick	Issue	Method
1	Extracting web data	Additional authentication data required when accessing website data from a work computer	Enter details of **proxy** server, **workplace** username and password and computer **domain** in SAS query

```
%macro web_xls_import(user=,pwd=);
 %let user= <workplace username>;
 %let pwd= <workplace password>;
 %let server = "<proxy server>:<proxy server port>/";
 %let website = <website link to file>;
 %let file = <website file name>;
 %let output = <location to save file>;
 %let comp_domain = <domain>;

 filename web url "&website." recfm=n lrecl=32756 proxy=&server user="&user." pass="&pwd."
 puser="&comp_domain.\&user." ppass="&pwd.";
 filename out "&output.\&file..xls" recfm=n lrecl=32756;

   data _null_;
       infile web;
       file out;
       input;
       put _infile_ ;
   run;
 %mend web_xls_import; %web_xls_import;
```

Tips & Tricks

We have included some useful tips & tricks to assist with troubleshooting issues.

No.	Tip & Trick	Issue	Method
2	Log files	SAS Workspace Manager removes temporary files when SAS closed	Use **logFile** and **writeLog** methods in the Excel VBA code that opens SAS

```
logFile = Range("out_path").Value & "\LOG " & Format(Now, "DD.MMM.YYYY HH.MM.SS.AM/PM") & ".log"
writeLog obWS.LanguageService.FlushLog(100000)
```

Tips & Tricks

We have included some useful tips & tricks to assist with troubleshooting issues.

No.	Tip & Trick	Issue	Method
3	Automation	Once process set up in SAS EG can automate code runs especially for daily web data extraction	Use SAS Management Console using the schedule manager to deploy SAS programs automatically

Tips & Tricks

We have included some useful tips & tricks to assist with troubleshooting issues.

No.	Tip & Trick	Issue	Method
4	Excel – SAS Interaction	Configuration requirements in Excel-VBA and SAS	Enable/ declare the following: - Excel VBA References: SAS IOM, ActiveX Data Objects (ADO) - SASWorkspaceManager - ADODB.Connecton - ADODB.Recordset

Questions