

1 Compilation, Revision and Updating of the GVAR Database (1979Q1-2013Q1)

This version of the GVAR dataset revises and extends up to 2013Q1 the last available GVAR dataset (the ‘2011 Vintage’), also accessible from this webpage. This updated dataset (1979Q1-2013Q1) will be referred to as the ‘2013 Vintage’, and was prepared by Rodrigo Mariscal, Ambrogio Cesa Bianchi, and Alessandro Rebucci at the Inter-American Development Bank.

1.1 Real GDP

In order to compile the 2013 Vintage real GDP, the International Financial Statistics (IFS) database and Inter-American Development Bank Latin Macro Watch Database (IDB LMW hereinafter) were used.¹ Countries are divided into three groups. First, those for which quarterly and seasonally adjusted data are available. Second, those for which quarterly data are available, but they are not seasonally adjusted. Third, those for which only annual data are available.

For the first group, the IFS data was used (Concept: Gross Domestic Product, Real Index, Quarterly, 2005 = 100) for Australia, Canada, France, Germany, Italy, Japan, Netherlands, New Zealand, South Africa, Spain, Switzerland, United Kingdom, and United States.² The 2013 Vintage real GDP was extrapolated using quarterly growth rates of the IFS series from 2004Q1 to 2013Q1.

For the Latin American countries, namely for Argentina, Brazil, Chile, Mexico, and Peru, the IDB LMW data was used (Concept: GDP, Real Index SA) and the series were updated in the same manner described for the quarterly seasonally adjusted data. For Philippines, the quarterly rate of change of the seasonal adjusted real GDP index (Source: Bloomberg. Ticker: PHNAGDPS Index) was used to extrapolate forward the 2011 Vintage real GDP from 2004Q1 to 2013Q1. For Norway, the series from IFS continued to show evidence of seasonality after seasonal adjustment. The series from OECD (Ticker: GPSA, Concept: Growth rate compared to previous quarter, seasonally adjusted) was used instead, and the 2011 Vintage real GDP was extrapolated forward using this growth rate from 2004Q1 to 2013Q1.

For the second group, we used the IFS data (Concept: Gross Domestic Product, Real Index, Quarterly, 2005 = 100) for Austria, Belgium³, Finland, India, Indonesia, Korea, Malaysia, Singapore, Sweden, Thailand, and Turkey. When IFS data was not available, gaps were filled using Bloomberg data: India in 2011Q2 (Ticker: INQGGDPY Index) and Singapore in 2000Q2, 2000Q3 and 2011Q2 (Ticker: SGDPYOY Index). These series were seasonally adjusted using Eviews, applying the National Bureau’s X12 program.⁴ As in the first group, the dataset was extended with

¹For further information see <http://www.iadb.org/Research/LatinMacroWatch/lmw.cfm>

²All series in the IMF IFS database have been reclassified. The concepts used here correspond to the ones used for the 2009 Vintage real GDP, namely 99BVRZF, 99BVPZF and BVPZF.

³The IFS data reports seasonal adjusted data for Belgium from 1999Q1 onward, thus no seasonal adjustment was made after all.

⁴Seasonal adjustment was performed on the log difference of GDP using the additive option. Using the first observation of the un-adjusted log GDP series, the adjusted log changes were then accumulated. Finally, the seasonally adjusted level series were obtained by taking the exponential of the log adjusted series. The seasonal adjustment window is the whole sample period, namely from 1979Q1 to 2013Q1.

forward extrapolation of the 2011 Vintage using quarterly growth rates of the adjusted IFS series from 2004Q1 to 2013Q1.

For Saudi Arabia the annual seasonally unadjusted IFS data (Concept: Gross Domestic Product, Real index, Annually, 2005 = 100) was interpolated to obtain the quarterly values.⁵ This series was then treated as the quarterly seasonally unadjusted data.

As no institution publishes a quarterly real GDP Index for China, it has to be compiled from a nominal GDP series. The National Bureau of Statistics (NBS) of China releases quarterly nominal GDP series without seasonal adjustment.⁶ Accordingly, a quarterly real GDP index for China was constructed as follows. First, the nominal GDP from NBS was seasonally adjusted. Then, the following formula was used

$$\log(RGDP)_1 = \log\left(\frac{GDP_1}{CPI_1}\right) \quad (1)$$

$$\log(RGDP)_t = \log(RGDP)_{t-1} + \log\left(\frac{GDP_t}{GDP_{t-1}}\right) - \log\left(\frac{CPI_t}{CPI_{t-1}}\right), \quad t > 1 \quad (2)$$

where CPI is defined in Section 1.2. The series was updated in the same manner as described for the quarterly seasonally adjusted data.

1.2 Consumer price index

In order to create the 2013 Vintage CPI, IFS data (Concept: Consumer Prices, All items, Quarterly, 2005 = 100) was collected for all countries with the exception of China.⁷ For the series that did not need seasonal adjustment, the quarterly growth rates were used to extrapolate forward the 2009 Vintage from 2004Q1 to 2011Q2. Consistent with the procedure in Section 1.1, the CPI series for the following countries were seasonally adjusted: Austria, Belgium, Canada, Chile⁸, Finland, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, South Africa, Spain, Sweden, Switzerland, Thailand, United Kingdom⁹, United States. The quarterly rate of change of the adjusted IFS series was used to extrapolate forward the 2011 Vintage CPI from 2004Q1 to 2013Q1, in order to obtain the 2013 Vintage.

For China, Bloomberg data (Ticker: CNCPIYOY Index, quarterly rate of change of CPI index, NSA) was used. First, the quarterly rate of change was seasonally adjusted using Eviews, applying the National Bureau's X12 program. Then, the 2013 Vintage CPI for China was obtained by for-

⁵The interpolation procedure is described in Supplement A of Dees, di Mauro, Pesaran, and Smith (2007) and can also be found in the Appendix of the user guide of the GVAR Toolbox.

⁶For further information see: <http://www.stats.gov.cn/english/statisticaldata/Quarterlydata/>

⁷The series in the IMF IFS database have been reclassified. The concept used here corresponds to the IFS CPI 64zf (level) series, which is the one used in the 2009 Vintage CPI.

⁸For Chile the Quarterly 2009 = 100 index was used as it was the only available data.

⁹Note that the UK inflation series has changed since August 2011. Instead of "Retail Price Index", IMF has started to publish "the Consumer Price Index", which was previously published as "the Harmonized Consumer Price Index", as the official inflation series of UK.

ward extrapolation of the 2011 Vintage using the rate of change of the adjusted Bloomberg series from 2004Q1 to 2013Q1.

1.3 Equity price index

Updated equity price series are from Bloomberg. A quarterly average of the MSCI Country Index in local currency was obtained for each of the following countries: Argentina, Australia, Austria, Belgium, Canada, Chile, Finland, France, Germany, India, Italy, Japan, Korea, Netherlands, Norway, New Zealand, Philippines, South Africa, Spain, Sweden, Switzerland, Thailand, United Kingdom, and United States.¹⁰ For Malaysia, as the standard MSCI Index is not available, a local currency stock market index (Source: Bloomberg, Ticker: MXMY Index) was used instead. The quarterly average was computed based on the closing price of the last Wednesday of each month. That is, the last Wednesday was used for each month, then a simple average of these Wednesday prices was computed for the first three months of the year to obtain the first quarterly price index. Then an average of the Wednesday values for the next three months was computed to obtain the second quarterly price index and so on. Finally, the 2013 Vintage equity price index was obtained by forward extrapolation of the 2011 Vintage using the rate of change of the new series from 2004Q1 to 2013Q1.

1.4 Exchange rates

Exchange rate series are from Bloomberg. A quarterly average of the nominal bilateral exchange rates vis-a-vis the US dollar (units of foreign currency per US dollar) was obtained for each country.¹¹ The quarterly average was computed based on the closing value of the last Wednesday of each month, as described for the equity price index. The 2013 Vintage exchange rate was obtained by forward extrapolation of the 2011 Vintage using the rate of change of the new series from 2004Q1 to 2013Q1.

The exchange rate series of the euro economies refer to the pre-euro exchange rate (i.e. national currency per dollar). To denominate them in euro, the quarterly average of the euro exchange rate vis-a-vis the US dollar was used (Source: Bloomberg, Ticker: EUR Curncy). The 1999Q1 value of this series was then used as the base value, which was extrapolated backwards and forwards using the rate of change of the series denominated in national currency.

1.5 Short term interest rates

IFS is the main source of data for the short term interest rates. Consistent with the 2009 Vintage, IFS data is used for Argentina, Chile, China, and Turkey (Concept: Interest Rates, Deposit Rate);

¹⁰To construct a MSCI Country Index, every listed security in the market is identified. Securities are free float adjusted, classified in accordance with the Global Industry Classification Standard (GICS), and screened by size, liquidity and minimum free at (Source: MSCI Barra, www.msibarra.com).

¹¹The list of Bloomberg tickers is as follows: ARS JPMQ Curncy, AUD BGN Curncy, ATS CMPN Curncy, BEF CMPN Curncy, BRL BGN Curncy, CAD BGN Curncy, CNY BGN Curncy, CLP BGN Curncy, COP BGN Curncy, FIM CMPN Curncy, FRF CMPN Curncy, DEM BGN Curncy, INR CMPN Curncy, IDR BGN Curncy, ITL BGN Curncy, JPY BGN Curncy, KRW BGN Curncy, MYR BGN Curncy, MXN BGN Curncy, NLG CMPN Curncy, NOK BGN Curncy, NZD BGN Curncy, PEN BGN Curncy, PHP BGN Curncy, ZAR BGN Curncy, SAR BGN Curncy, SGD BGN Curncy, ESP CMPN Curncy, SEK BGN Curncy, CHF BGN Curncy, THB BGN Curncy, TRY BGN Curncy, GBP BGN Curncy, VEF BGN Curncy.

for New Zealand and Peru (Concept: Interest Rates, Discount Rate); for Canada, Malaysia, Mexico, Philippines, South Africa, Sweden, UK and US (Concept: Interest Rates, Treasury Bill Rate); and for Australia, Brazil, Finland, Germany, Indonesia, Italy, Japan, Korea, Norway, Singapore, Spain, Switzerland, and Thailand (Concept: Interest Rates, Money Market Rate).¹²

For Austria, Belgium, France, and the Netherlands no data is available for any of these series from 1999Q1 when the euro was introduced. The country specific IFS Money Market Rate was used from 1979Q1 to 1998Q4 and the series was completed to 2011Q2 using the corresponding data for Germany as the representative euro area interest rate. From 2012Q2 onward the IFS stopped publishing the Germany inters rate, to complete the rest of the data, we interpolate using the Euribor from Bloomberg (Ticker: EUR003M) form 2012Q3 to 2013Q1.

For India, quarterly averages of daily Bloomberg data (India Treasury Bill 3-Month Yield. Ticker: GINTB3MO Index) are constructed in the same way as the quarterly exchange rate series.¹³ When IFS data was not available, gaps were filled using Bloomberg data: Norway in 2007Q1 and from 2009Q4 to 2011Q2 (Ticker: NKDRC CMPN Curncy), Philippines in 2003Q4, 2005Q4, 2006Q4 and 2008Q2 (Ticker: PH91AVG Index). The 2009 Vintage short term interest rates are extended with these series from 2004Q1 to 2011Q2.

1.6 Long term interest rates

The IFS data (Concept: Interest Rates, Government Securities, Government Bonds) is used to extend the series for all 18 countries for which long term interest rate data is available, namely Australia, Austria, Belgium, Canada, France, Germany, Italy, Japan, Korea, Netherlands, New Zealand, Norway, South Africa, Spain, Sweden, Switzerland, United Kingdom, and United States.¹⁴ The 2011 Vintage long term interest rates are extended with these series from 2004Q1 to 2013Q1.

1.7 Oil price index

For the oil price index a Brent crude oil price from Bloomberg was used (Series: Current pipeline export quality Brent blend. Ticker: CO1 Comdt). To construct the quarterly series, the average of daily closing prices was obtained for all trading days within the quarter. The quarterly rate of change of this new series was used to extrapolate forward the 2011 Vintage oil price index from 2004Q1 to 2013Q1.

1.8 PPP-GDP weights

The main source for construction of the country specific PPP-GDP weights is the World Development Indicator database of the World Bank. The GDP in Purchasing Power Parity terms in

¹²All series in the IMF IFS database have been reclassified. The concepts used here correspond to the ones used in the 2009 Vintage for the short term interest rates, namely the 60Lzf series, the 60Czf series, the 60Bzf series, and the 60zf series.

¹³This is an indicative Treasury Bill Rate polled daily by Bloomberg from various sources. The constructed series is not exactly equal to the original DdPS series, however they are very close.

¹⁴All series in the IMF IFS database have been reclassified. The concepts used here correspond to the ones used in the 2011 Vintage for the long term interest rates, namely the 61zf series.

current international dollars (Ticker: NY.GDP.MKTP.PP.CD) was downloaded for all countries from 2009 to 2012.¹⁵

1.9 Trade matrices

To construct the trade matrices, the IMF Direction of Trade statistics was used. For all the countries considered the matrix of Exports and Imports (c.i.f.) was downloaded at the annual frequency. The data for 2011 and 2012 Exports and Imports is appended to the trade matrices associated with the 2011 Vintage.

¹⁵WDI data was not available for Argentina in 2011 and 2012. The growth rate of 2010 was used in both cases to fill the gaps.