Bank for International Settlements (BIS)

The Bank of International Settlements (BIS) is an international financial institution composed of central banks. BIS is located in Basel, Switzerland and facilitates the interaction of central banks in order to make international monetary policy more predictable and transparent. BIS does this by hosting meetings with central banks, conducting research and policy pertaining to monetary issues and financial stability, and acting as a counterparty for central banks with their transactions. They also serve as an agent with international financial operations and engage in dialogue with other financial actors. Their ultimate goal is to ensure monetary and financial stability among its 60 central bank members. "With regard to its banking activities, the customers of the BIS are central banks and international organizations. As a bank, the BIS does not accept deposits from, or provide financial services to, private individuals or corporate entities.

BIS goals are explained in its 3 pillars:

Pillar 1 (Regulatory capital): Credit risk, F-IRB, A-IRB, PD, LGD, EAD, operational risk, market risk, value at risk

- The first pillar of regulation relates to capital adequacy, which applies to equity and capital assets. Since these two assets do not alway reflect the current market nor can they account for every risk present among every trading position, BIS is able to manage and change these when needed. BIS requires that members banks have capital/asset ratios to be above a prescribed minimum in order to keep banks strong against shocks.

Pillar 2 (Supervisory review): economic capital, liquidity risk, legal

- Member banks are required to ensure liquidity and limit liability in order to reduce the risk of bank runs and to make borrowing safer for customers. BIS works to control asset inflation due to members rising fear of "bubbles". Furthermore, exporting countries are finding it difficult to manage a range of domestic monetary requirements while maintaining an export economy. Thus, BIS helps prescribe reserve levels for each countries style of exporting and domestic policy.

Pillar 3 (Market disclosure)

- Makes its research and findings free to the public in order to help ensure financial and monetary stability. Their analysis covers monetary and financial policy along international banking statistics.

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Contents

Availability

The data available ranges from as early as the 1800s to 2016. "The statistics published by the BIS are a unique source of information about the structure of and activity in the global financial system. They are compiled in cooperation with central banks and other national authorities and are designed to inform analysis of financial stability, international monetary spillovers and global liquidity"[1]

Data source

The data and metadata is available here: https://www.bis.org/statistics/index.htm?m=6%7C37

Definitions

Consolidated Banking Statistics: These statistics measure banks' country risk exposures. They capture the worldwide consolidated claims of internationally active banks headquartered in BIS reporting countries. The consolidated statistics include the claims of banks' foreign affiliates but exclude intragroup positions, similarly to the consolidation approach followed by banking supervisors. They detail the transfer of credit risk from the immediate counterparty to the country of ultimate risk (where the guarantor of a claim resides).

Credit to the Non-Financial Sector: The series of credit to the non-financial sector cover advanced economies, emerging economies, as well as 43 individual state economies. "All series are published in local currency, in US dollars and as percentages of nominal GDP. The regional aggregates as percentages of GDP are calculated based on conversion to the US dollar at market and at purchasing power parity (PPP) exchange rates"[2]. BIS records the outstanding amount of credit at the end of the each quarter. Credit to non-financial sector is provided by domestic banks. The term "credit" entails core debt, which is defined as loans, debt securities, currency, and deposits.

Credit-to-GDP Gaps: The published series cover 43 countries with the earliest recorded data starting in 1951. "The credit-to-GDP gap is defined as the difference between the credit-to-GDP ratio and its long-run trend"[3]. The credit-to-GDP ratio as published in the BIS database of total credit to the private non-financial sector, capturing total borrowing from all domestic and foreign sources, is used as input data. The BIS credit-to-GDP data captures total borrowing from all domestic and foreign sources and thus total credit to the private non-financial sector.

It is important to note that the BIS publication of credit-to-GDP gaps data that is used may differ from national authorities' consideration of their own credit-to-GDP gaps because of their countercyclical capital buffer decisions. However, BIS advises national authorities to use good judgment when setting capital buffers and use the best information available for BIS' publication.

Debt Service Ratios for the Private Non-Financial Sector: BIS' statistical publication of Debt Service Ratios (DSRs) covers 17 countries and entails 3 categories which are collected from national accounts

1.End of quarter debt service ratios (DSR) for Households and NPISHs (percent ratio)

2. Private Non-Financial Sector (percent ratio)

3. Non-Financial Corporations (percent ratio)

DSR illustrates the portion of income used to pay for debt and is a good indicator of real-time financial status of banks, which can serve as an early signal of crisis. Furthermore, if DSR is high then there is a negative correlation on low consumption and investment in the respective country.

Consumer Prices: The data used from BIS is the year-on-year percentage changes. The year-on-year changes capture the rise and fall of consumer prices more accurately than the 2010-100 index. Some of the BIS data goes back to the 1800s.

The consumer price data for the most recent periods correspond to the consumer price index published by national statistical offices. Proxy indicators, such as a consumer price index with limited coverage or a retail price index, were used to extend the series backward as far as possible.

The average length of the monthly series is close to 55 years. Some annual series go back to the middle of the 19th century - or even earlier for several countries. The BIS constructed long consumer price index series by joining the series available for consecutive periods. In undertaking this work, the BIS worked in close coordination with national authorities with the aim of providing the most accurate data possible.

Securities: BIS publication of securities includes a wide variety of instruments and maturities for three sets of statistics which are international debt securities, domestic debt securities, and total debt securities.

The BIS compiles and publishes three sets of statistics on borrowing activity in debt capital markets:

- International Debt Securities (IDS) are debt securities issued in a market other than the local market of the country where the borrower resides. They capture issues conventionally known as eurobonds and foreign bonds. IDS are compiled from a security-by-security database built by the BIS using information from commercial data providers"[4].
- Domestic Debt Securities (DDS): DDS are debt securities issued in the local market of the country where the borrower resides, regardless of the currency in which the security is denominated. They are compiled from data reported to the BIS by central banks, with the

exception of a few countries in which the BIS collects data via publicly available sources. The BIS calculates exchange rate-adjusted changes in stocks by assuming that amounts outstanding are denominated in the currency of the local market"[5].

- Total Debt Securities (TDS): TDS are debt securities issued by residents in all markets (the sum of international and domestic debt securities). The BIS does not calculate TDS. This is due to potential overlaps between IDS and DDS statistics. TDS statistics are published only for countries whose central banks report the relevant data to the BIS (some central banks report only DDS or TDS, while others report both)"[6].

Effective Exchange Rates: BIS published the data in broad and nominal data. The BIS effective exchange rate (EER) covers 61 states' economies. These include EU member countries and the EU as an exclusive entity. The most recent weights are based on trade in the 2011-13 period, with 2010 as the indices' base year. Pardee does not include the EU entity in its data because the EU as an entity is not part of our country listings. The EERs are recorded with their respective currencies.

"Nominal EERs are calculated as geometric weighted averages of bilateral exchange rates. Real EERs are the same weighted averages of bilateral exchange rates adjusted by relative consumer prices. The weighting pattern is time-varying (see broad and narrow weights). The EER indices are available as monthly averages. An increase in the index indicates an appreciation"[7].

Consumer Prices: The BIS’s data set for consumer prices contains long monthly and annual time series for 60 countries. Each country's data is produced by the respective country and correlates with the most recent index of consumer price. Some of the annual series go back to the 19th century, and some go back into the 17th century. The BIS was able to construct these long consumer price index series by joining available series for consecutive periods by working with national statistical offices.

Foreign Exchange Markets:

- *Foreign Exchange Markets Over the Counter (OTC) Interest Rate Derivatives Turnover*

"There is no unified or centrally cleared market for the majority of trades, and there is very little cross-border regulation. Due to the over-the-counter (OTC) nature of currency markets, there are rather a number of interconnected marketplaces, where different currencies instruments are traded. This implies that there is not a *single* exchange rate but rather a number of different rates (prices), depending on what bank or market maker is trading, and where it is. In practice the rates are quite close due to arbitrage. Data may differ slightly from national survey data owing to differences in aggregation procedures and rounding. The data for the Netherlands are not fully comparable over time due to reporting improvements in 2013.   2 Adjusted for local inter-dealer double-counting (ie “net-gross” basis)"[8].

- *Foreign Exchange Turnover*

Trading in foreign exchange (FX) markets averaged $5.1 trillion per day in April 2016, according to the 2016 Triennial Central Bank Survey of FX and over-the-counter (OTC) derivatives markets. This is down from $5.4 trillion in April 2013. FX spot trading declined for the first time since 2001, even as activity in FX derivatives continued to increase. Trading in OTC interest rate derivatives averaged $2.7 trillion per day in April 2016, up from $2.3 trillion in April 2013. Single currency interest rate contracts only. Data may differ from national survey data owing to differences in aggregation procedures and rounding. Data for the Netherlands are not fully comparable over time due to reporting improvements in 2013. Adjusted for local inter-dealer double-counting (ie "net-gross" basis)[9].

Debt service ratios for the private non-financial sector: BIS' publication captures different subsets for the 32 countries listed in the report. These subsets include Households and NPISHs, Non-Financial Corporations, and Private Non-Financial Sector.

The debt service ratio (DSR) is defined as the ratio of interest payments plus amortisations to income. The DSR reflects the share of income used to service debt and has been found to provide important information about financial-real interactions"[10]. The DSR is useful for detecting banking crisis and can help forecast the crisis early on. Furthermore, a high DSR has a strong negative impact on consumption and investment. The DSRs data is collected from national accounts.

"The BIS publishes debt service ratios (DSR) for the household, the non-financial corporate and the total private non-financial sector (PNFS) for 17 countries. Total PNFS DSRs are also available for 15 additional countries, using different income and interest rates measures, due to data availability at the national level. As such, the DSR provides a flow-to-flow comparison – the flow of debt service payments divided by the flow of income. To derive the DSR on an internationally consistent basis, the BIS applies a unified methodological approach and uses, as much as possible, input data that are compiled on an internationally consistent basis"[11].

Credit to the private nonfinancial sector: The BIS publication is presented in quarterly datasets with subsets. All series on credit to the non-financial sector cover 43 economies, both advanced and emerging. They capture the outstanding amount of credit at the end of the reference quarter. Credit is provided by domestic banks, all other sectors of the economy and non-residents. In terms of financial instruments, credit covers the core debt, defined as *loans, debt securities and currency & deposits.*

All series are published in local currency, in US dollars and as percentages of nominal GDP. The regional aggregates as percentages of GDP are calculated based on conversion to the US dollar at market and at purchasing power parity (PPP) exchange rates.

The "private non-financial sector" includes non-financial corporations (both private-owned and public-owned), households and non-profit institutions serving households. In terms of financial instruments, credit covers loans and debt securities. This long series details credit to the private non-financial sector as well as credit to the general government sector. The series captures the outstanding amount of credit at the end of the referenced quarter.

Property Prices: *(Data Not Used)* because there is very limited coverage of a few countries for a short duration of time. It does not provide a comprehensive, macro look at property prices.

"The residential and commercial property price statistics collate data from different countries"[12]

Derivatives: The BIS publishes three sets of derivatives statistics:

- OTC derivatives - the semiannual survey provides information about the size and structure of the largest OTC derivatives markets, while the Triennial Central Bank Survey, a broader survey including data from more than 50 jurisdictions, captures turnover in OTC interest rates and foreign exchange derivatives markets.fckLR*Exchange-traded derivatives - provide information about the size and structure of organised futures and options markets.

External Debt: The Joint BIS-IMF-OECD-World Bank statistics on external debt - developed jointly by the BIS, the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), and the World Bank (WB), disseminate data on the external debt of developed, developing and transition countries and territories, as well as statistics on selected foreign assets.

The joint statistics - which include quarterly data obtained by creditor and market sources, as well as national sources - provide a breakdown by instrument and, importantly, show measures of short-term debt not easily available from other sources. The BIS banking and securities market statistics are a vital element in this joint effort. Although the joint statistics are unable to provide a fully comprehensive and consistent measure of total external debt in each country, they bring together the most relevant international comparative data currently available in this area.

Global Liquidity Indicators: The term global liquidity is used by the BIS to mean the ease of financing in global financial markets. Credit is among the key indicators of global liquidity and the focus of the global liquidity indicators estimated by the BIS[13].

Property prices: Detailed data set (residential; nominal)

This data set details nominal residential prices for 58 countries, with data differing significantly from country to country in terms of type of property, area covered, priced unit etc. The set also includes a selected nominal and real residential property price series at a quarterly interval[14].

Series Available

Reported Series

1. Banking
   1. Locational banking statistics
   2. Consolidated banking statistics
2. Securities
   1. International Debt Securities
   2. Domestic Debt Securities
   3. Total Debt Securities
3. Derivatives
   1. Exchange-traded derivatives
   2. Semiannual and Triennial Over the Counter (OTC) derivatives
4. Global Liquidity Indicators
5. Credit to the Non-Financial Sector
6. Credit-to-GDP gaps

7. Debt Service ratios
8. External Debt
9. Property Prices
10. Consumer Prices
11. Effective Exchange Rates
12. Payment Systems
13. Foreign Exchange Markets

Derived Series

1. Banking
2. Consolidated banking statistics
3. Securities
4. Credit to the Non-Financial Sector
5. Credit-to-GDP gaps
6. Debt Service ratios
7. Consumer Prices
8. Effective Exchange Rates
9. Foreign Exchange Markets

Instructions on pulling BIS data

Credit to GDP gaps: The data pulled from BIS are the Actual Trend (ratio) and Actual Data. Pardee does not use the HP filter. The HP filter is "the long-term trend of the credit-to-GDP ratio is calculated by means of a one-sided (ie backward-looking) HP filter. The filter is run recursively for each period, and the ex post evaluation of performance of the credit gap is based on this recursive calculation"[15]. The HP filter data was not used because "the HP filter suffers from a well-known end point problem.16 This means that the estimated trend at the end point (the most recent observation) can change considerably as future data points become available"[16].

Debt Service ratio: Some countries were categorized by all 3 sets [End of quarter debt service ratios (DSR) for Households and NPISHs (percent ratio), Private Non-Financial Sector (percent ratio), and Non-Financial Corporations (percent ratio)], some only 2, some with only 1. Pardee has captured each category by averaging the 4 quarters within a year, and produced the average annual DSR for each category.

Securities: Pardee pulled floating rate, exchange rate linked, inflation indexed, and straight fixed rate securities. All the data is measured in millions of US dollars.

Effective Exchange Rates: Pardee has pulled Real Broad EER and Nominal Broad EER. The broad data covers the widest range of countries consistently since 1994. The BIS publication displays the EERs quarterly. Pardee has taken the average of the 4 quarters per year to create an annual average EER.

Consumer Prices: Pardee uses the year-on-year changes by per cent (ratio) shows more detailed changes in consumer prices compared to the 2010=100 index. Pardee uses the annual series for the 60 published countries because the International Futures model uses annual data.

Foreign Exchange Markets: The two datasets Pardee pulled from BIS Foreign Exchange Markets are Foreign Exchange Markets Over-the-Counter (OTC) and Foreign Exchange Turnover. Each dataset is measured on a net-gross basis by billions of US Dollars per country.

Debt service ratios for the private non-financial sector: Pardee uses the 32 private non-financial sector countries datasets because it captures the sum of the two income measures from the household and NFC sectors that comprise the income of the total PNFS. This provides a holistic look at the data.

Credit to the Private Non-Financial Sector: The Pardee coder averaged the four quarters within a year and used the result as the data that include:

- Non-financial sector corporations, or sectors or all sectors banks, households, NPISHs, non-financial corporations, corporations, market value, respective country currency, domestic currency in US Dollars, adjusted for breaks, not adjusted for breaks, and GDP
- Percentage of GDP adjusted for breaks or US Dollar adjusted for breaks or Domestic currency not adjusted for breaks

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