



# StatGPT

## Talk to Official Statistics Generative AI and SDMX

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November 2024

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**I would like some indicators of economic growth and inflation for the USA**



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Consumer Spending

Average Price Data

Gross Domestic Purchases Price Index

Gross Domestic Income

Gross Domestic Product

All Urban Consumers - CPI

GDP Price Deflator

GDP by Industry

Personal Consumption Expenditure Price Index

GDP Price Index

All Urban Consumers - Chained CPI

# Users face several challenges when accessing official statistics



Official statistics are published across multiple platforms, in multiple formats, using multiple discovery tools.

Official statistics are published using statistical language (which is not necessarily 'natural language').


Official statistics are presented in thematic tables (prices, health, education, economy), when most questions cross themes.

Official statistics are redistributed and then redistributed some more raising issues about vintages and questions about ownership.

# DEMO: StatGPT

### StatGPT


#### Talk to

 **StatGPT: Global Economic Data Commons**  
 Application that provides access to economy statistics datasets from different providers. Uses text-embedding-3-large model for embeddings. Uses Hybrid Search.

[See full list...](#)

#### More info

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Type a text or «/» to use a prompt... 

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# StatGPT


## Talk to

▶ Playback

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 StatGPT: Global Economic Data Commons

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◀ do you have any banking data available? ▶

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[Playback] do you have any banking data available? 1 Stop playback

do you have any banking data available?

- Agent: Available Datasets
- Available Datasets (3.17 s)

Yes, I have access to banking-related datasets:

- FRED, Household Debt Service and Financial Obligations Ratios (FOR) ★
  - ID: FRB:FOR(2.0.0)
  - Provider: The Federal Reserve System of the United States (FRED)
  - Dataset: Household Debt Service and Financial Obligations Ratios (FOR)
  - Last updated: June 2024
  - URL: <https://www.federalreserve.gov/releases/housedebt/about.htm>
- BIS, Debt securities statistics
  - ID: BIS:WS\_NA\_SEC\_DSS(1.0.0)
  - Provider: The Bank for International Settlements (BIS)
  - Dataset: Debt securities statistics
  - Last updated: June 2024



Type a message

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[Playback] do you have any banking data available? 1 Stop playback

- Last updated: June 2024
- URL: <https://datatopics.worldbank.org/world-development-indicators/>
- ECB, Balance Sheet Items
  - ID: ECB:BSI(1.0)
  - Provider: European Central Bank (ECB)
  - Dataset: Balance Sheet Items
  - Last updated: July 2024
  - URL: <https://data.ecb.europa.eu/data/datasets/BSI/data-information>
- BIS, Debt securities statistics
  - ID: BIS:WS\_NA\_SEC\_DSS(1.0.0)
  - Provider: The Bank for International Settlements (BIS)
  - Dataset: Debt securities statistics
  - Last updated: June 2024
  - URL: <https://data.bis.org/topics/DSS>

Please let me know if you need information from any specific dataset or have any other questions!



I am interested in the outstanding debt of the US?

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World Intangible Investment High x StatGPT x +

https://app.statgpt.dialx.ai

STATGPT Jim Tebrake

[Playback] do you have any banking data available? 1 Stop playback

I am interested in the outstanding debt of the US?

Agent: Metadata and Query ✓

Normalizing Query (1.26 s) ✓

Extracting Named Entities (1.18 s) ✓

Show more

I found multiple datasets that might contain the information you are looking for regarding the outstanding debt of the US. Please specify which dataset you are interested in from the list below:

**BIS, Debt securities statistics**

- ID: BIS:WS\_NA\_SEC\_DSS(1.0.0)
- Provider: The Bank for International Settlements (BIS)
- Dataset: Debt securities statistics
- Last updated: June 2024
- URL: <https://data.bis.org/topics/DSS>
- Query:

Type a message

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[Playback] do you have any banking data available? 1 Stop playback

Can you retrieve the data from the BIS, total debt securities, all sectors, short and long term maturities for the last five years.

- Agent: Metadata and Query
- Normalizing Query (2.22 s)
- Extracting Named Entities (7.67 s)

Show more

The query for debt securities statistics from the Bank for International Settlements (BIS) has been executed successfully. The data covers all sectors and includes both short-term and long-term maturities for the United States, spanning from October 9, 2019, to October 9, 2024. The received data contains 72 series.

Attachments

Data: BIS:WS_NA...	Data (CSV): BIS:W...	URL Query: BIS:WS...
Graph: [F] Transac...	Graph: [LE] Closing...	Code samples: BIS:...
Query (JSON): BIS:...		



Type a message

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STATGPT

Search conversation...

+ New conversation

Organization

- StatGPT Conversations C...

Today

- [Playback] do you have a...
- [Playback] do you have a...

Last 7 days

- What data do you have a...
- do you have any banking ...
- [Playback] do you have a...

Last 30 days

- I would like to create a Ph...
- [Playback] [Replay] what ...
- New conversation 3
- New conversation 2
- do you have any indicator...
- do you have any indicator...
- New conversation 1
- [Playback] Do you have a...
- [Playback] [Replay] what ...
- [Replay] what data is avai...



◀ Type a message ▶

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**STATGPT**

Search conversation...

+ New conversation

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- [Playback] do you have a...
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Last 7 days

- What data do you have a...
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- [Playback] do you have a...

Last 30 days

- I would like to create a Ph...
- [Playback] [Replay] what ...
- New conversation 3
- New conversation 2
- do you have any indicator...
- do you have any indicator...
- New conversation 1
- [Playback] Do you have a...
- [Playback] [Replay] what ...
- [Replay] what data is avai...

[Playback] do you have any banking data available? 2 [Stop playback](#)

2024. The received data contains 72 series.

Attachments ^

- Data: BIS:WS\_NA\_...
- Data (CSV): BIS:W...
- URL Query: BIS:WS\_NA\_SEC\_DSS(1.0.0)

[https://apim-imfeid-dev-01.azure-api.net/statgpt-demo/global-data/registry/sdmx/2.1/data/WS\\_NA\\_SEC\\_DSS/Q.N.US.XW.S1+S11+S12+S122+S12P+S13+S1311+S1M.S1.N.L.F+LE.F3.L+S+T\\_Z.USD\\_T.M+N.V.N.\\_T?startPeriod=2019-10-09&endPeriod=2024-10-09&subscription-key=a572251d54a94964bb353b9bb7c5ce90](https://apim-imfeid-dev-01.azure-api.net/statgpt-demo/global-data/registry/sdmx/2.1/data/WS_NA_SEC_DSS/Q.N.US.XW.S1+S11+S12+S122+S12P+S13+S1311+S1M.S1.N.L.F+LE.F3.L+S+T_Z.USD_T.M+N.V.N._T?startPeriod=2019-10-09&endPeriod=2024-10-09&subscription-key=a572251d54a94964bb353b9bb7c5ce90)

- Graph: [F] Transac...
- Graph: [LE] Closing...
- Code samples: BIS:WS\_NA\_SEC\_DSS(1.0.0)

```
python
provider = sdmx.Client("BIS")
data_msg = provider.data(
    "WS_NA_SEC_DSS",
    key={'REF_AREA': ['US'], 'STO': ['LE'], 'F': ['F'], 'REF_SECTOR': ['S13', 'S11', 'S1M', 'S1'],
    params={'startPeriod': '2019-10-09', 'endPeriod': '2024-10-09'}
)
```

- Query (JSON): BIS:...

Type a message

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STATGPT Jim Tebrake

[Replay] what data is available to query

What is a household debt service ratio?

Agent: Generic Question

General Question (15.82 s)

The Household Debt Service Ratio (DSR) is an economic indicator that measures the ratio of debt payments to disposable personal income. This ratio is specifically focused on the payments that households make to service their debt, which includes both principal and interest payments on mortgage and consumer debt.

### Key Points about Household Debt Service Ratio:

- Purpose:** The DSR provides insights into the financial health and stability of households. It indicates how much of a household's income is being used to pay off debts, which can affect their ability to spend on other goods and services.
- Components:** It typically includes payments on mortgage debt (home loans) and consumer debt such as credit cards, auto loans, student loans, and other personal loans.
- Interpretation:**

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# StatGPT



Application that provides access to economy statistics datasets from different providers. Uses text-embedding-3-large model for embeddings. Uses Hybrid Search.

[See full list...](#)

No hallucinations since you are generating a query that you control and is executed against a database.

Allows the user to speak in their language.

Has multiple agents to deal with the diversity of user requests (query agent, knowledge agent, generic question agent, available datasets agent)



# DEMO: Talk to the Manuals



# Start chatting

with statistics manuals



Type a new question...



The System of National Accounts (SNA) provides detailed recommendations on how to record financial services. Here are the key aspects based on the information from the retrieved documents:

- 1. Explicit and Implicit Charges:** Financial services are often provided in return for explicit charges. However, some transactions in financial assets may involve both explicit and implicit charges. The SNA addresses these distinctions and provides guidelines on how to record financial services that are both explicitly and implicitly charged <sup>1</sup>.
- 2. Interest Charges and Financial Services:** Financial services provided in association with interest charges on loans and deposits are considered. The SNA distinguishes between the reference interest rate and the actual interest rates charged by banks, and the difference is recorded as final consumption expenditure of households <sup>2</sup>.
- 3. Transactions in Financial Markets:** Financial services related to the acquisition and disposal of financial assets and liabilities in financial markets are recorded. This includes any fees or charges associated with these transactions <sup>1</sup>.
- 4. Insurance and Pension Services:** Financial services associated with insurance and pension schemes are detailed in the SNA. The value of these services is calculated based on the premiums paid and the services produced by insurance enterprises and pension schemes <sup>2 1</sup>.
- 5. Time of Recording:** The SNA recommends recording transactions on a change-of-ownership basis. This accrual approach means that flows and changes in the corresponding stocks are recorded at the time economic value is created, transformed, exchanged, transferred, or extinguished, rather than at the time of payment <sup>3</sup>.



Type a new question...



According to the System of National Accounts (SNA), implicit charges for financial services must be measured indirectly. These charges can arise in several ways:

1. **Interest Rate Spreads:** Implicit charges often involve the difference between the interest rates paid and received by financial institutions. For example, the implicit service charge can be calculated as the sum of the bank interest on loans less the SNA interest on the same loans, plus the SNA interest on deposits less the bank interest on the same deposits. This difference is recorded as service charges paid by the borrower or depositor to the financial institution <sup>1</sup>.
2. **Buying and Selling Price Margins:** Another method to measure implicit charges is by calculating the difference between the buying and mid-price and between the mid-price and selling price. This method is used, for example, in the foreign exchange market. Each service should be calculated at the time of the transaction concerned so that holding gains and losses occurring between the time of the purchase and sale are not treated as services <sup>2</sup>.
3. **Combination with Other Flows:** Implicit charges may also be combined with other transactions or other flows on a particular financial instrument. The service charge associated with borrowing and lending is one such example where it is combined with interest <sup>2</sup>.

The SNA emphasizes that these implicit charges, although not always directly observable, are crucial for accurately estimating the output of the financial services sector. Ignoring these implicit charges could lead to underestimating the output of the industry and sector <sup>2</sup>.

2 references ▾

1 [SNA2008.pdf - Part 1](#)

2 [SNA2008.pdf - Part 2](#)

AI-generated content may be incorrect



Type a new question...



Can you provide an numerical example of how to calculate implicit financial services according to the SNA?

According to the System of National Accounts (SNA), the calculation of implicit financial services, specifically Financial Intermediation Services Indirectly Measured (FISIM), involves estimating the value of services provided through the interest rate spreads on loans and deposits. Here is a numerical example based on the guidelines from the SNA:

### Numerical Example for Calculating FISIM:

#### 1. Define the Reference Rate:

- Assume the reference rate (a rate that reflects the pure cost of borrowing without intermediation services) is 3%.

#### 2. Interest Rates Applied:

- Bank interest rate on loans: 5%
- Bank interest rate on deposits: 1%

#### 3. Amounts of Loans and Deposits:

- Total loans: \$100,000
- Total deposits: \$100,000

#### 4. Calculate the Implicit Service Charges:

- For loans:
  - Interest received by the bank = 5% of \$100,000 = \$5,000
  - Interest that would have been received at the reference rate = 3% of \$100,000 = \$3,000
  - Implicit service charge on loans = \$5,000 - \$3,000 = \$2,000
- For deposits:
  - Interest paid by the bank = 1% of \$100,000 = \$1,000
  - Interest that would have been paid at the reference rate = 3% of \$100,000 = \$3,000
  - Implicit service charge on deposits = \$3,000 - \$1,000 = \$2,000

#### 5. Total FISIM:



Type a new question...



#### 4. Calculate the Implicit Service Charges:

- For loans:
  - Interest received by the bank = 5% of \$100,000 = \$5,000
  - Interest that would have been received at the reference rate = 3% of \$100,000 = \$3,000
  - Implicit service charge on loans = \$5,000 - \$3,000 = \$2,000
- For deposits:
  - Interest paid by the bank = 1% of \$100,000 = \$1,000
  - Interest that would have been paid at the reference rate = 3% of \$100,000 = \$3,000
  - Implicit service charge on deposits = \$3,000 - \$1,000 = \$2,000

#### 5. Total FISIM:

- Total FISIM = Implicit service charge on loans + Implicit service charge on deposits
- Total FISIM = \$2,000 + \$2,000 = \$4,000

This example illustrates how the implicit charges for financial intermediation services are calculated by comparing the actual interest rates applied by the bank to a reference rate. The difference between the interest received/paid by the bank and the interest calculated at the reference rate represents the value of the financial intermediation services provided by the bank<sup>1 2</sup>.

2 references >

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Type a new question...



How does the SNA recommend recording Bitcoin

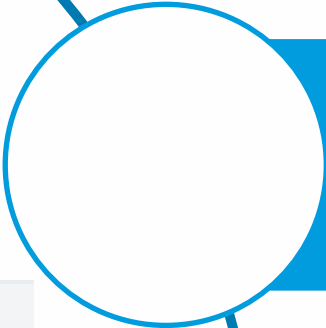
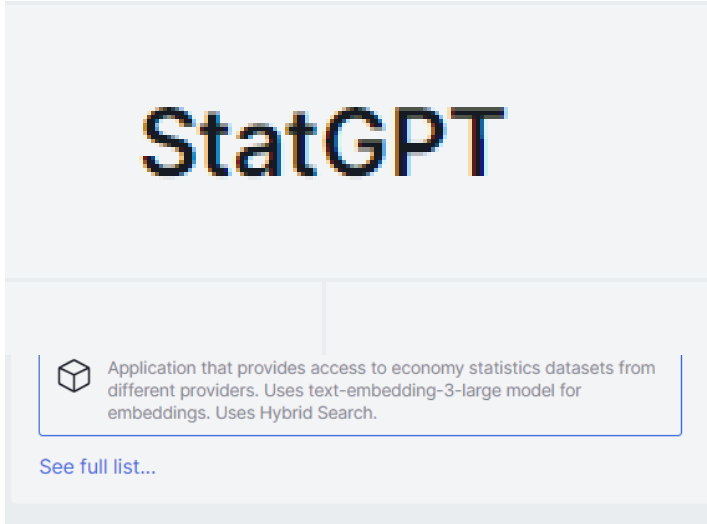
The requested information regarding the specific recording of Bitcoin transactions in the System of National Accounts (SNA) is not available in the retrieved documents. The documents provide general principles and methods for recording financial transactions, assets, and liabilities, but do not explicitly address cryptocurrencies like Bitcoin. Please try another query or topic related to the available documents or general principles of the SNA.

AI-generated content may be incorrect

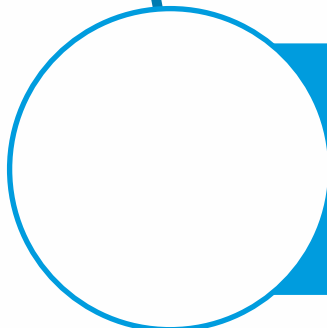
Type a new question...



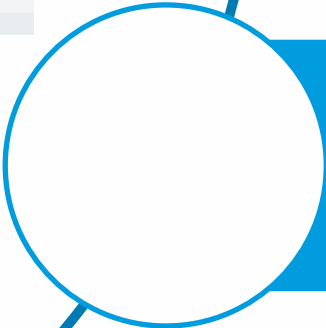




Responses restricted to International Macroeconomic Statistics Standards.



Provides references.



Can Dial to different LLMs

12<sup>th</sup> IMF Statistical Forum

MEASURING THE IMPLICATIONS OF  
**AI ON THE  
ECONOMY**

NOVEMBER 20-21

Washington, DC

#StatsForum