# The Fiscal and Monetary History of Uruguay (1960-2014)

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January 8th, 2016

Becker-Friedman Institute
University of Chicago

# Two questions to answer

1. What **role did the monetary and fiscal policies play on the macroeconomic instability of Uruguay** between 1960 and 2014?

2. Is there a **relationship between low growth, poor economic performance and macroeconomic instability** in Uruguay during this period?

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1. **Stylized facts**
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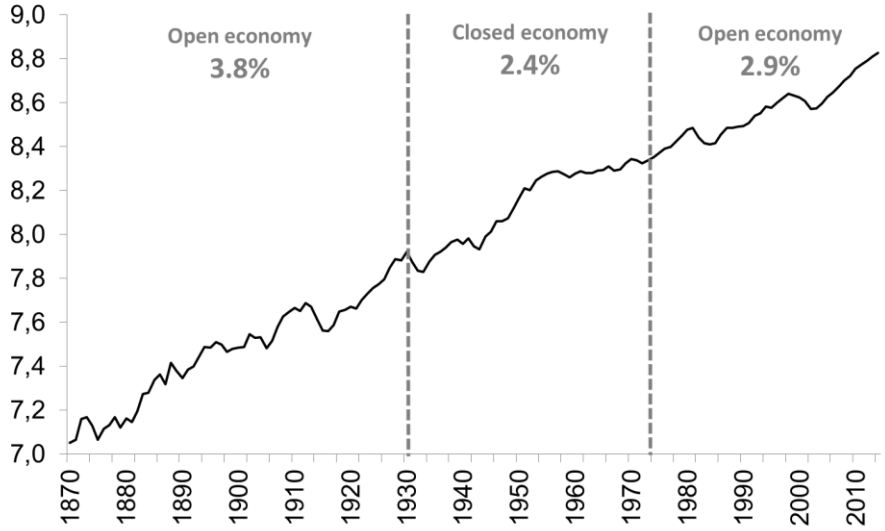
# Low growth, high volatility and long *decline*

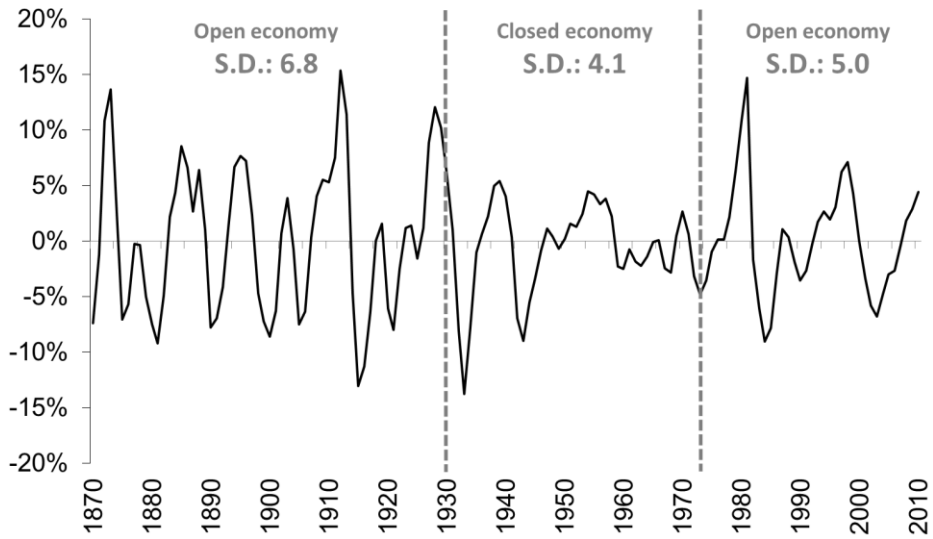
**Log of real GDP**

Source: Institute of Economics - Universidad de la República, Central Bank of Uruguay



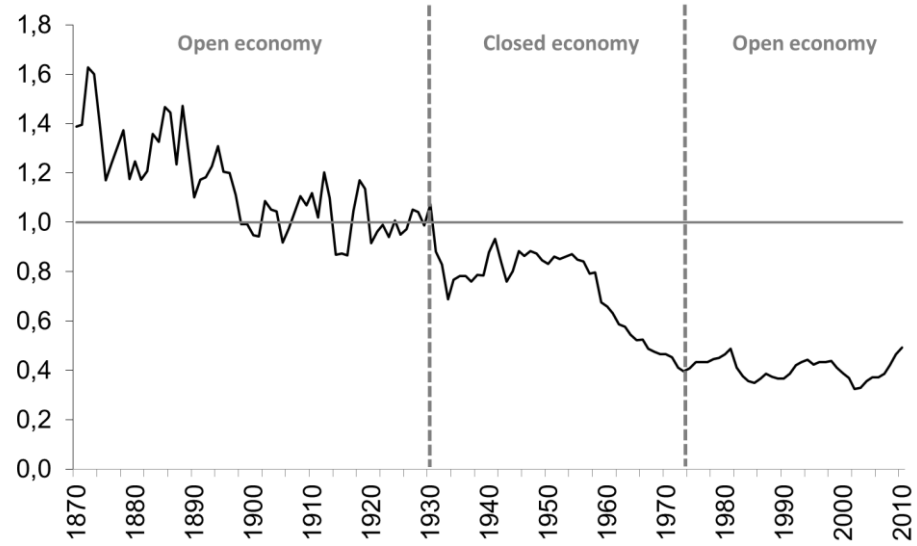

**GDP per capita: Ratio cycle-trend (%)**

Source: own elaboration based on The Maddison-Project (1990 Int. GK$)




**GDP per capita: ratio Uruguay - average Denmark and Finland**

Source: The Maddison-Project (1990 Int. GK$)

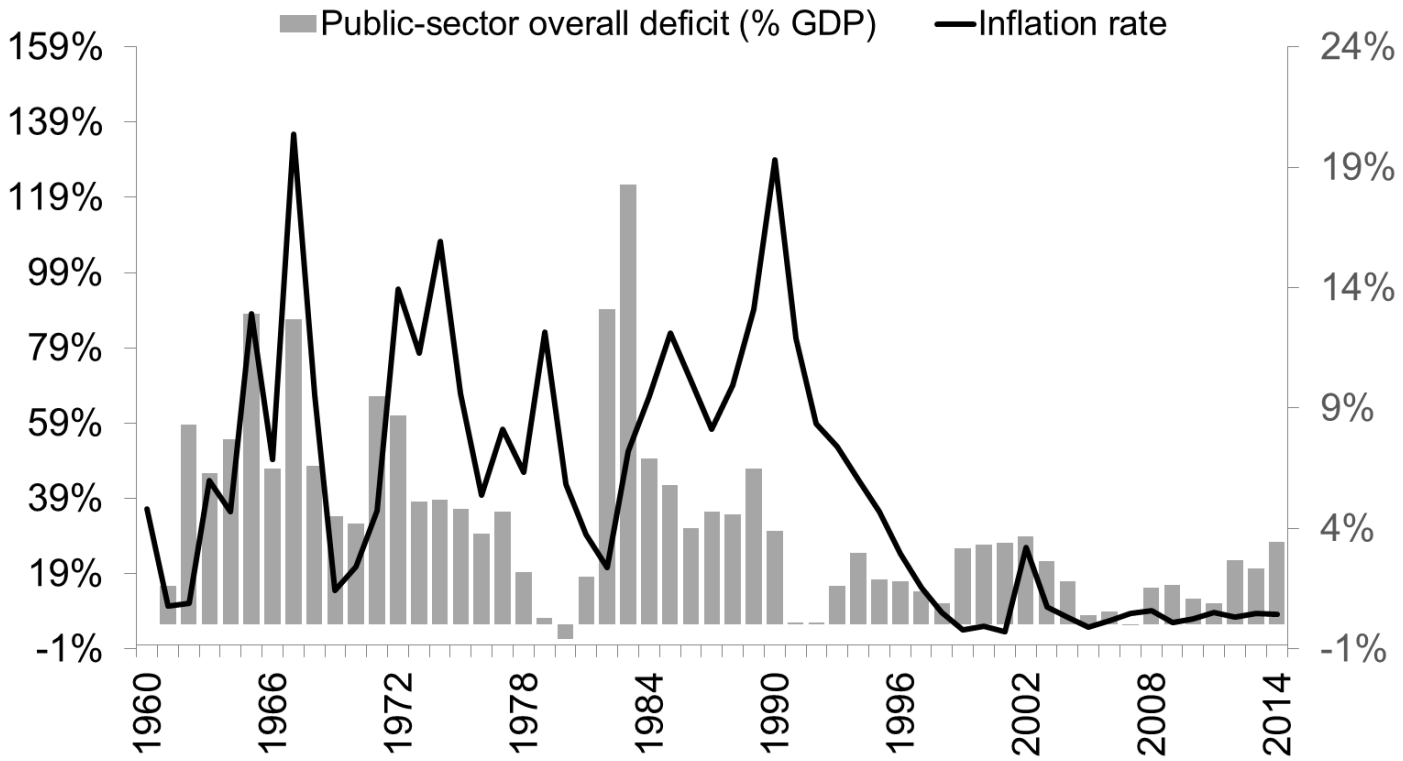



- Growth was **comparatively low during the *closed-economy period***.
- During the *open-economy* periods, although growth was greater, **higher GDP volatility prevented boom phases from consolidating**.
- Uruguay's **GDP per capita fell from a level similar to the average** of Denmark and Finland to half of that.
- Throughout the 20th century, Uruguay went through **a long economic *decline***.

# Chronic inflation was associated with sustained fiscal deficits

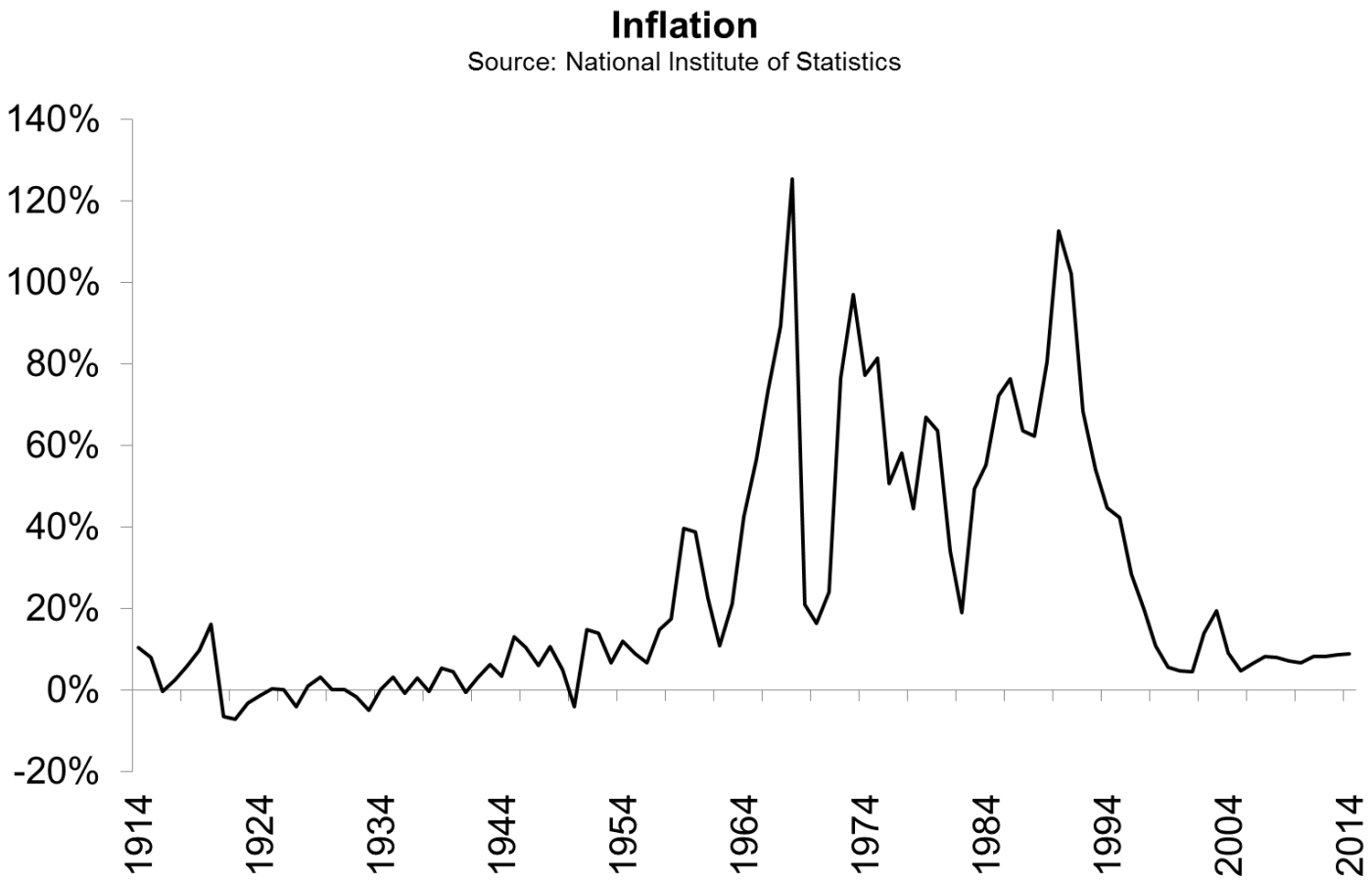
**Public-sector overall deficit and inflation rate**

Source: Banda & Onandi (1992), Borchardt et al. (2000), Licando & Vicente (2007), Central Bank of Uruguay, Instituto de Economía - Universidad de la República.

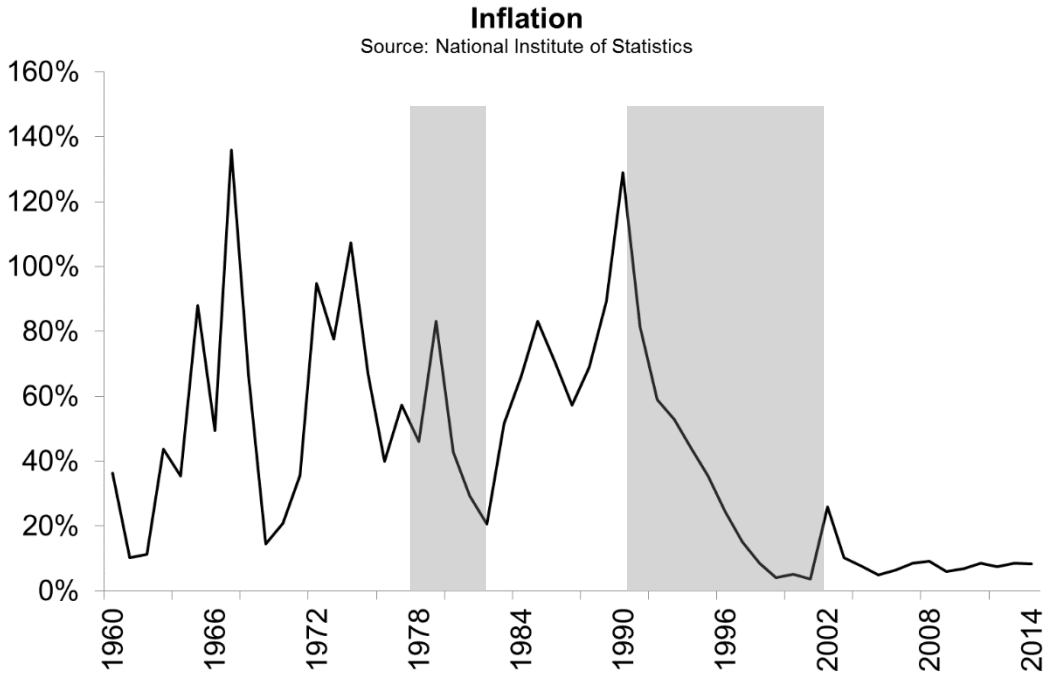


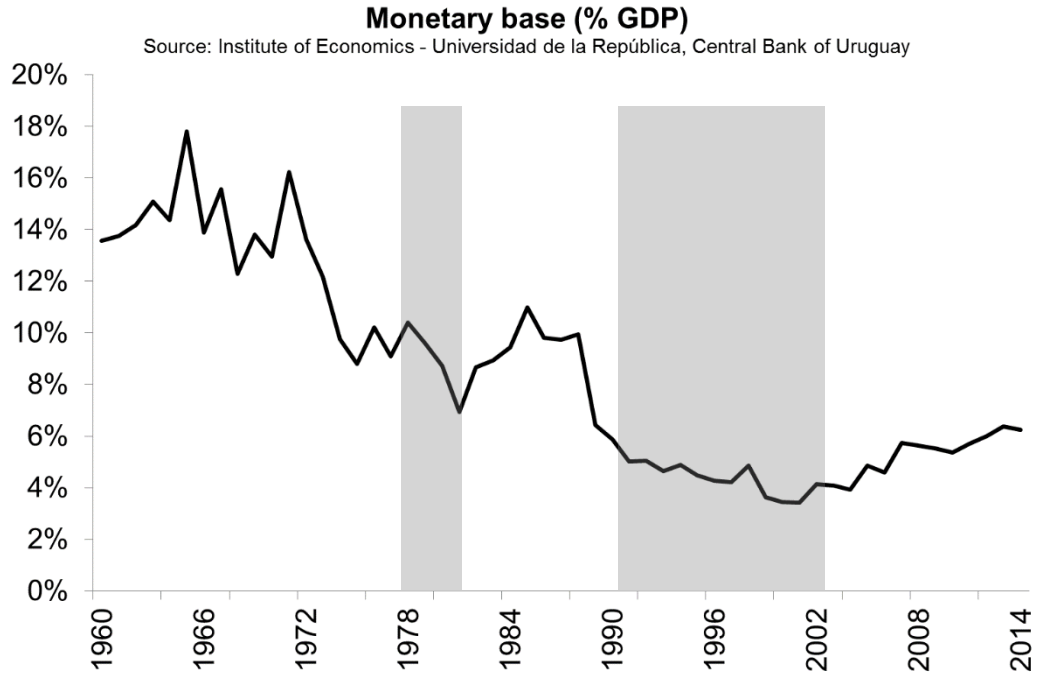

The origins of high inflation rates were **strongly connected to sustained fiscal deficits**.

# Inflation rate 1914-2014



# Chronic inflation caused demonetization of the economy



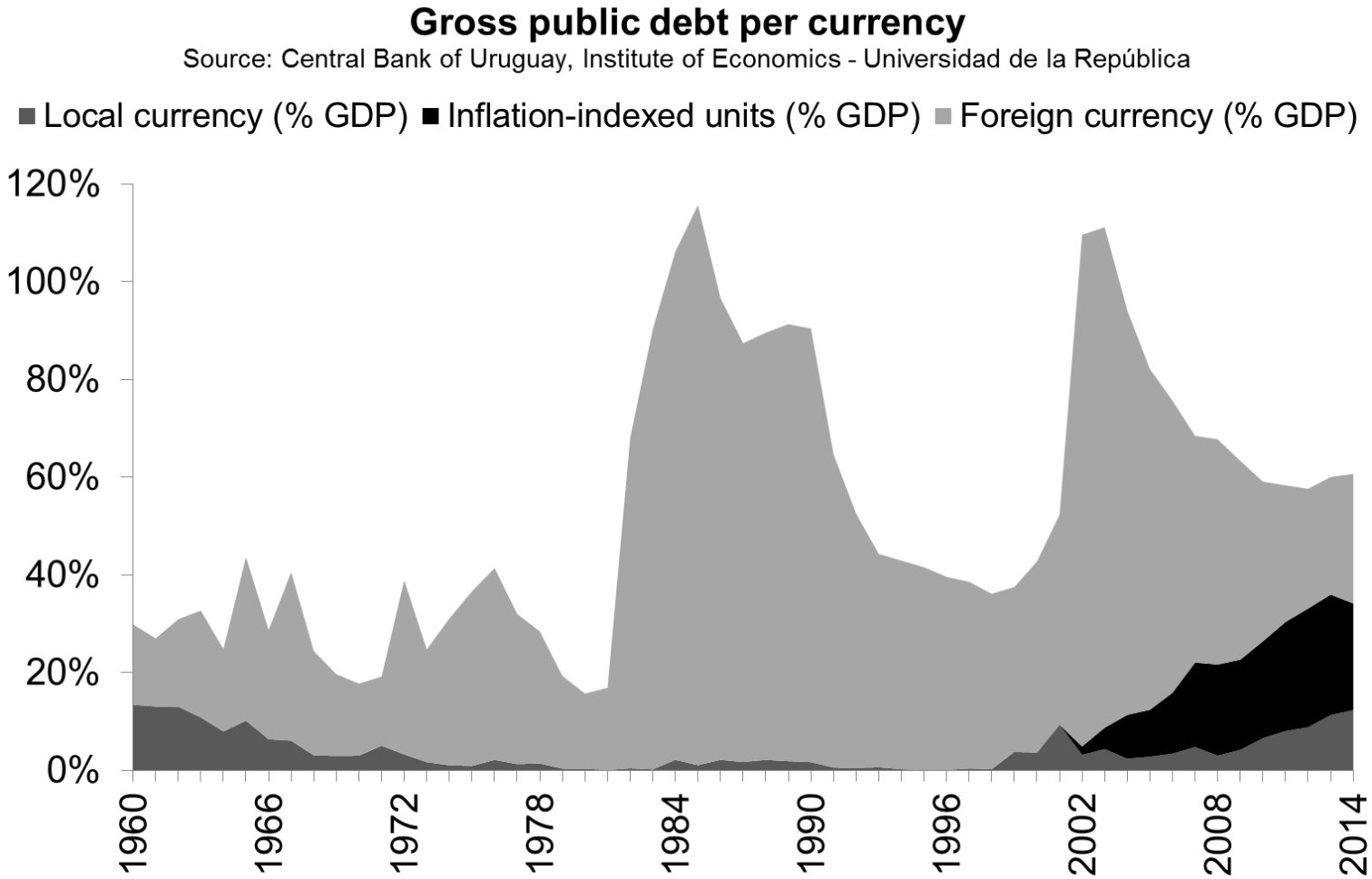




Stabilization program

The **economy demonetized** due to a persistently high inflation for two reasons:

1. **Chronic inflation** itself provoked a contraction in the demand for money;
2. Stabilization programs (1978-1982 and 1991-2002) based on **exchange-rate anchors** induced changes in portfolios.

# Public-finance vulnerability increased due to public-debt dollarization




- Between the 1970s and 2002, **public debt denominated in local currency** almost disappeared.
- Significant increases in the debt-to-GDP ratio happened during the **two debt crises** (1982 and 2002).

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# Analytical framework

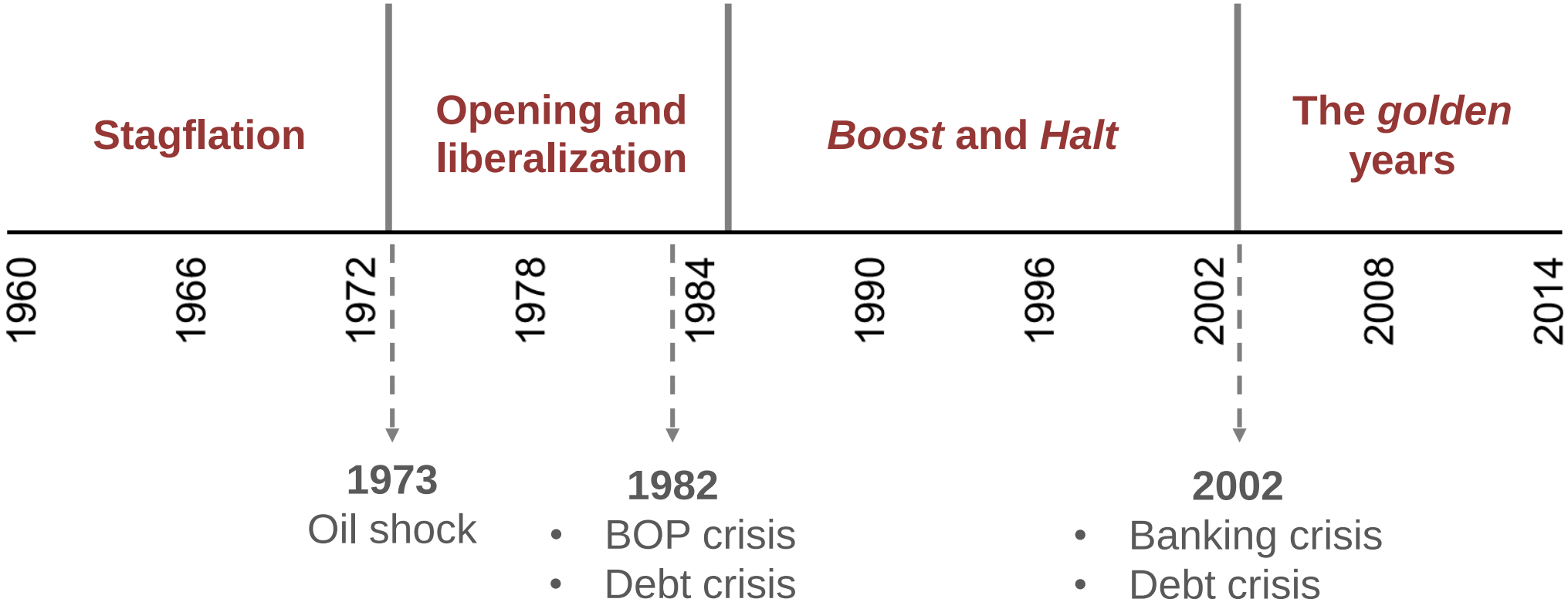
Following the model of Kehoe, Nicolini & Sargent (2013), the analytical framework used to describe fiscal constraints in Uruguay between 1960 and 2014 is:

$$B_t + M_t + b_t P_t + b_t^* E_t = (D_t + T_T)P_t + B_{t-1}R_{t-1} + M_{t-1} + b_{t-1}r_{t-1}P_t + b_{t-1}^* r_{t-1}^* E_t \quad \textbf{(1)}$$

Equation (1) can be expressed in terms of real GDP as follows:

$$(\theta_t^N - \theta_{t-1}^N) + (\theta_t^r - \theta_{t-1}^r) + \xi_t(\theta_t^* - \theta_{t-1}^*) + (m_t - m_{t-1}) + m_{t-1}\left(1 - \frac{1}{g_t \pi_t}\right)$$
$$= \theta_{t-1}^N \left(\frac{R_{t-1}}{\pi_t g_t} - 1\right) + \theta_{t-1}^r \left(\frac{r_{t-1}}{g_t} - 1\right) + \theta_{t-1}^* \left[\xi_t \left(\frac{r_{t-1}^*}{g_t \pi_t^W} - 1\right)\right] + d_t + t_t$$

# 1960-2014: four subperiods



# Consolidated budget constraint for Uruguay 1960-2014

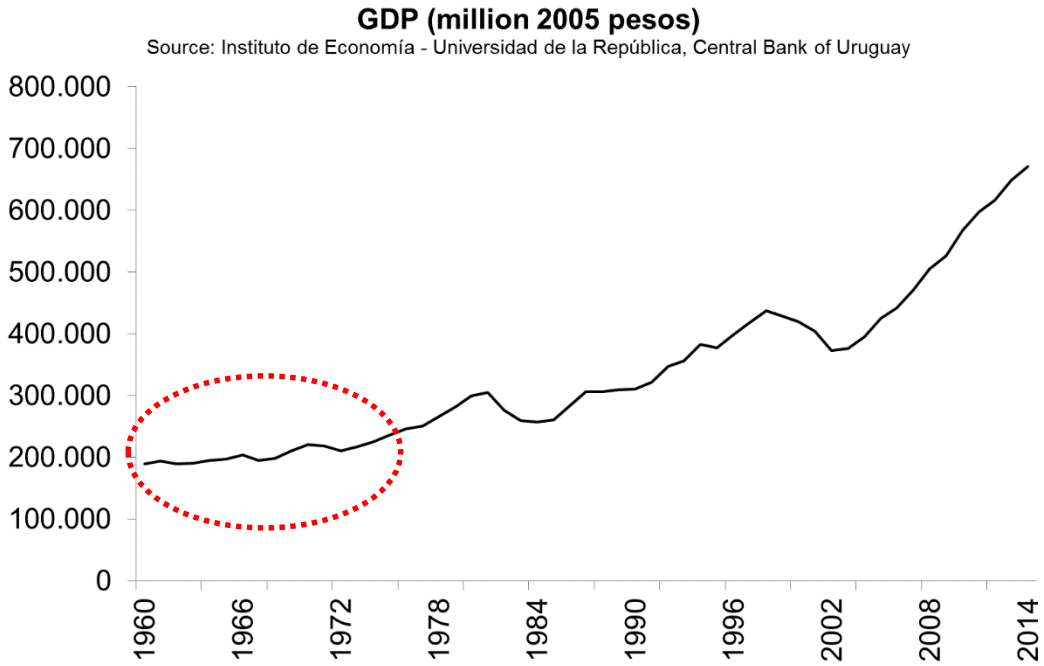
| | 1960-1973 | 1974-1985 | 1986-2003 | 2004-2014 |
|---|---|---|---|---|
| ***Sources*** | | | | |
| Local-currency public debt (Δ) | -1,1% | 0,0% | 0,2% | 0,7% |
| Foreign-currency public debt (Δ) | 0,7% | 4,7% | 0,1% | -2,8% |
| Inflation-indexed public debt (Δ) | - | - | 0,2% | 1,6% |
| Monetary base (Δ) | -0,2% | -0,1% | -0,4% | 0,2% |
| Inflation tax | 4,7% | 3,4% | 1,9% | 0,6% |
| **Total** | **4,0%** | **7,9%** | **2,1%** | **0,3%** |
| ***Obligations*** | | | | |
| Public-sector primary deficit | 6,1% | 2,9% | -0,8% | -1,9% |
| Local-currency return | - | - | - | -0,1% |
| Foreign-currency return | -0,4% | 2,4% | 1,6% | -0,9% |
| Inflation-indexed return | - | - | -0,1% | -0,5% |
| Transfers* | -1,7% | 2,6% | 1,4% | 3,7% |
| **Total** | **4,0%** | **7,9%** | **2,1%** | **0,3%** |

**Estimated as a residual*

Source: based on Kehoe, Nicolini & Sargent (2013)

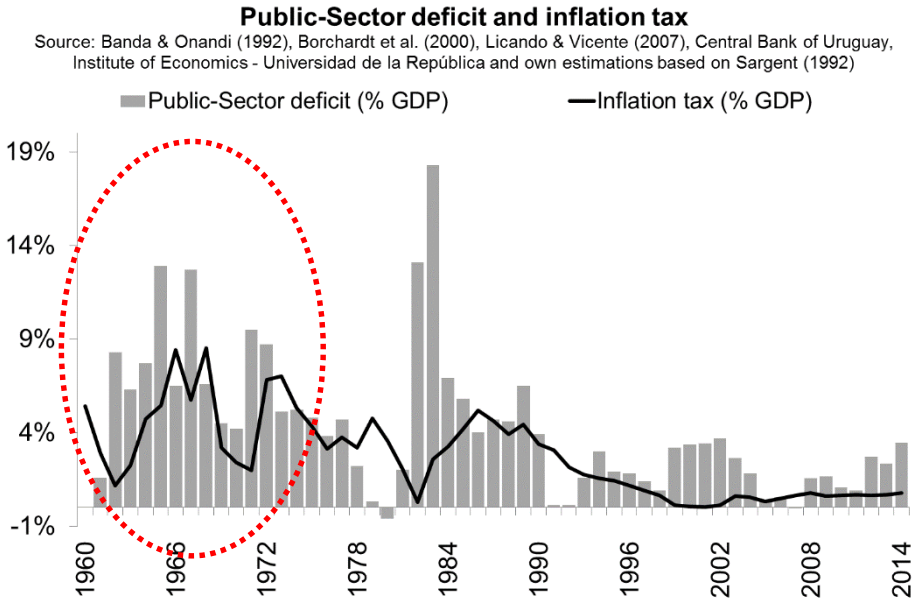
- **The primary fiscal deficit shrinks** throughout the whole period.
- Although the inflation tax drops throughout the entire period, **only between 1974 and 1985 public debt was more relevant** as a financing source.
- Chronic inflation determined that public debt was mostly **denominated in foreign currency**.
- The high interest payments in 1974-2003 were associated with the two debt crises (1982 and 2002).
- Since **2004 the budget constraint decreases significantly** due to the consolidation of a primary surplus and a declining debt-to-GDP ratio.

# Stagflation (1960-1973)

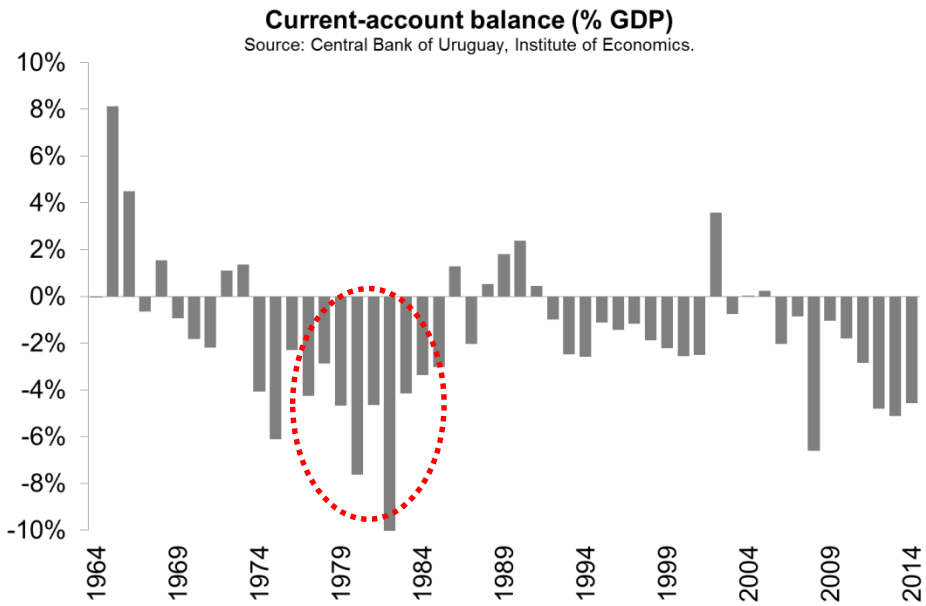


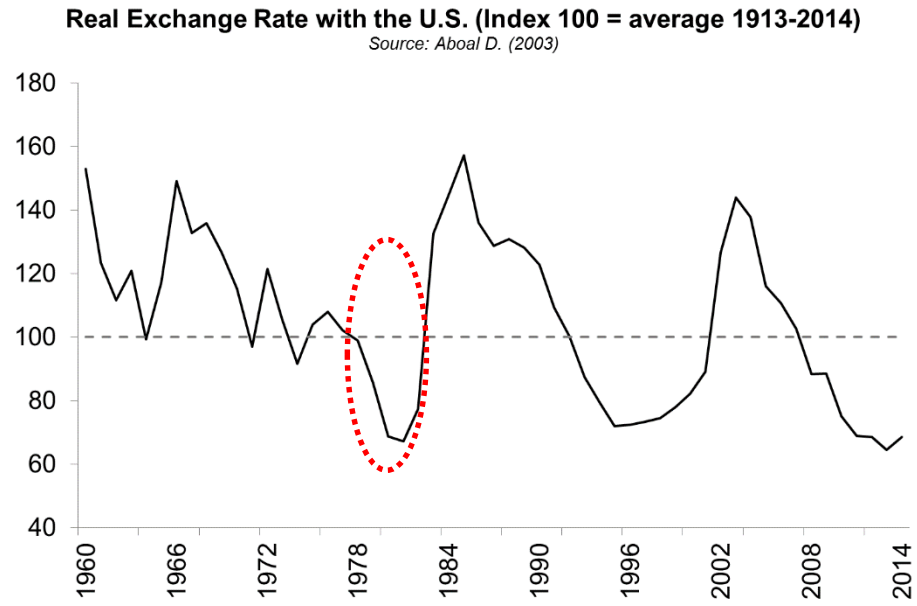

| ***Sources*** | |
|---|---|
| Local-currency public debt (Δ) | -1,1% |
| Foreign-currency public debt (Δ) | 0,7% |
| Inflation-indexed public debt (Δ) | - |
| Monetary base (Δ) | -0,2% |
| Inflation tax | 4,7% |
| **Total** | **4,0%** |
| ***Obligations*** | |
| Public-sector primary deficit | 6,1% |
| Local-currency return | - |
| Foreign-currency return | -0,4% |
| Inflation-indexed return | - |
| Transfers* | -1,7% |
| **Total** | **4,0%** |

- **Fiscal deficit grew** because government expenses increased more rapidly than the revenues.
- Since the economy was closed, **the main source to finance fiscal deficits was the inflation tax.**

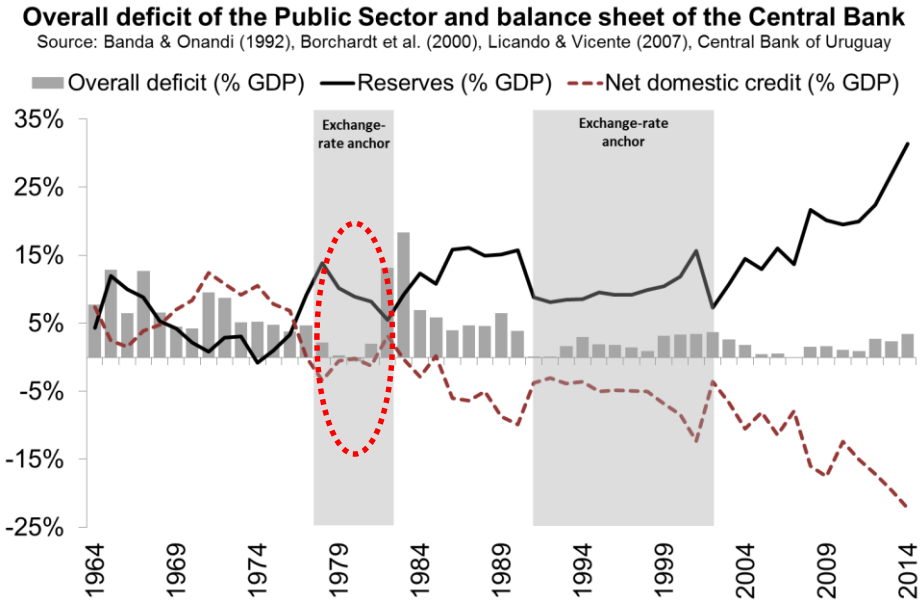


# Opening and liberalization (1974-1985)

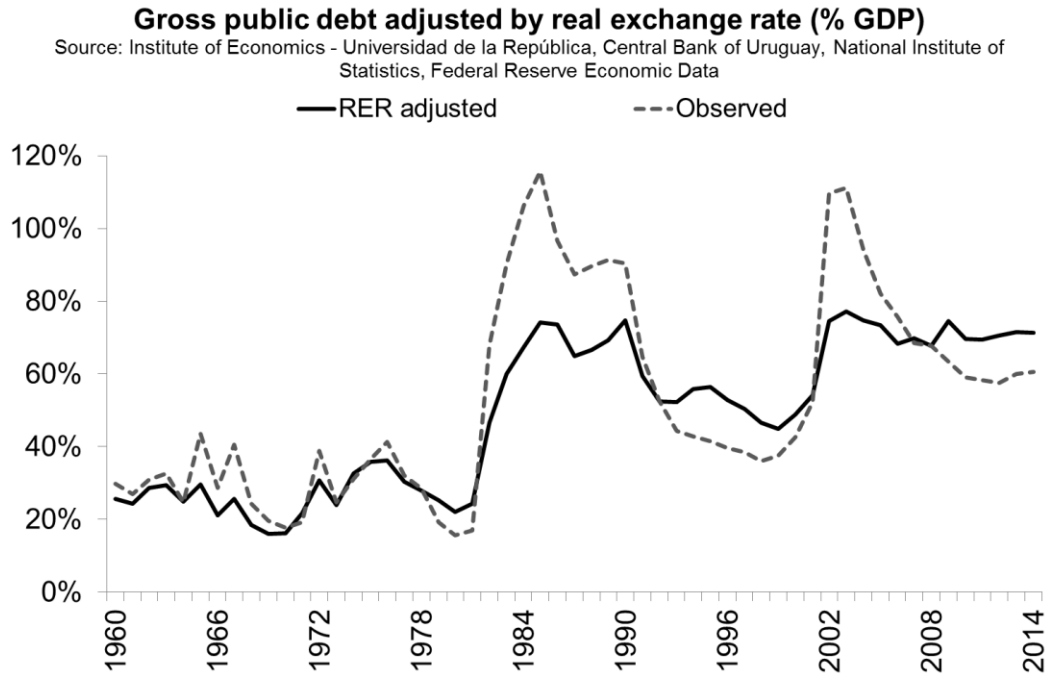



- Between 1978 and 1982, the government implemented an anti-inflationary plan based on an **exchange-rate anchor**.
- An **insufficient fiscal contraction** to moderate the effects of both disinflation and real appreciation on the aggregate demand, caused a significant deterioration of the **current-account balance**. This led to a **loss of Central-Bank reserves** once the external financing disappeared.
- A **Krugman-type BOP crisis** happened in 1982.



# Opening and liberalization (1974-1985)

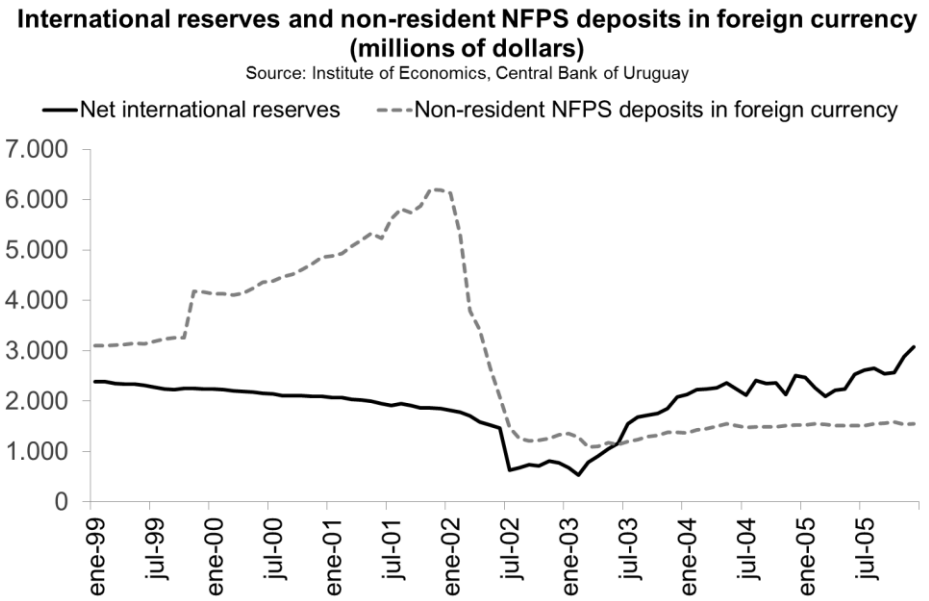


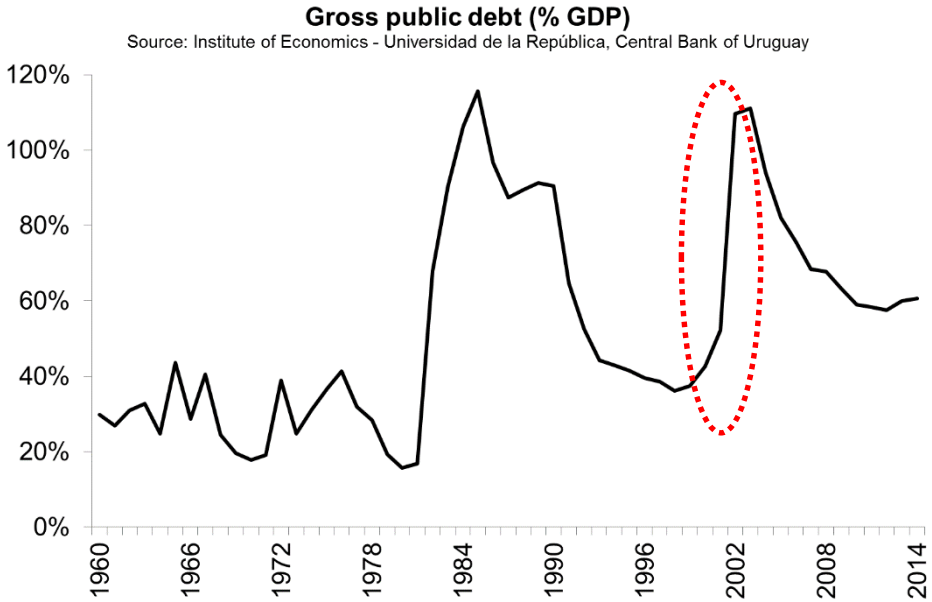

| ***Sources*** | |
|---|---|
| Local-currency public debt (Δ) | 0,0% |
| Foreign-currency public debt (Δ) | 4,7% |
| Inflation-indexed public debt (Δ) | - |
| Monetary base (Δ) | -0,1% |
| Inflation tax | 3,4% |
| **Total** | **7,9%** |
| ***Obligations*** | |
| Public-sector primary deficit | 2,9% |
| Local-currency return | - |
| Foreign-currency return | 2,4% |
| Inflation-indexed return | - |
| Transfers* | 2,6% |
| **Total** | **7,9%** |

- The **budget constraint reached its highest level in this period**.
- Obligations:
  - The fiscal deficit and transfers grew because of the increase in the quasi-fiscal deficit.
- Sources:
  - The inflation tax grew as consequence of the currency devaluation.
  - Foreign debt increased due to i) **public-debt restructuring**; ii) **recomposing of Central-Bank reserves;** and iii) **effects of the devaluation** on the dollar-denominated debt.

This is **why a BOP crisis became a public-debt crisis**.

# Boost and halt (1986-2003)

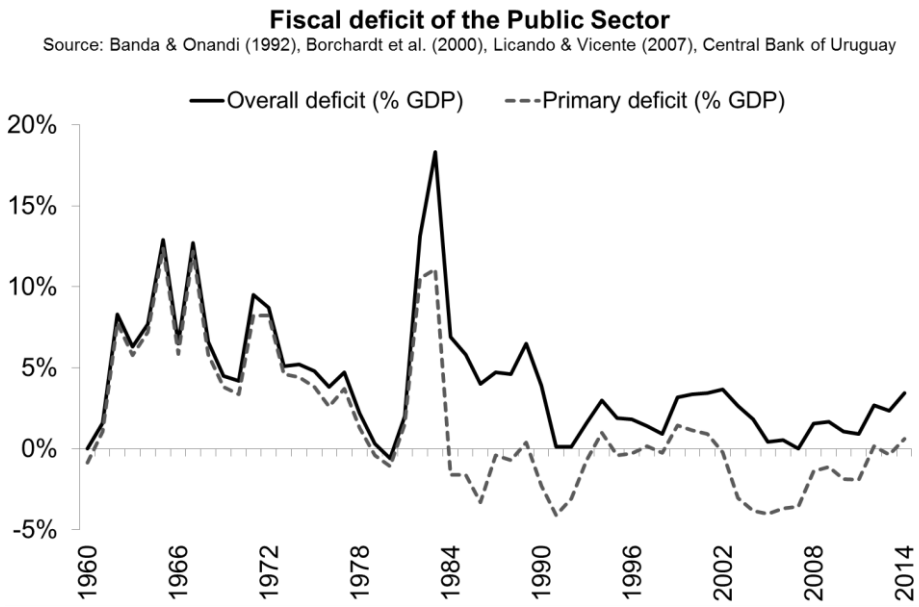


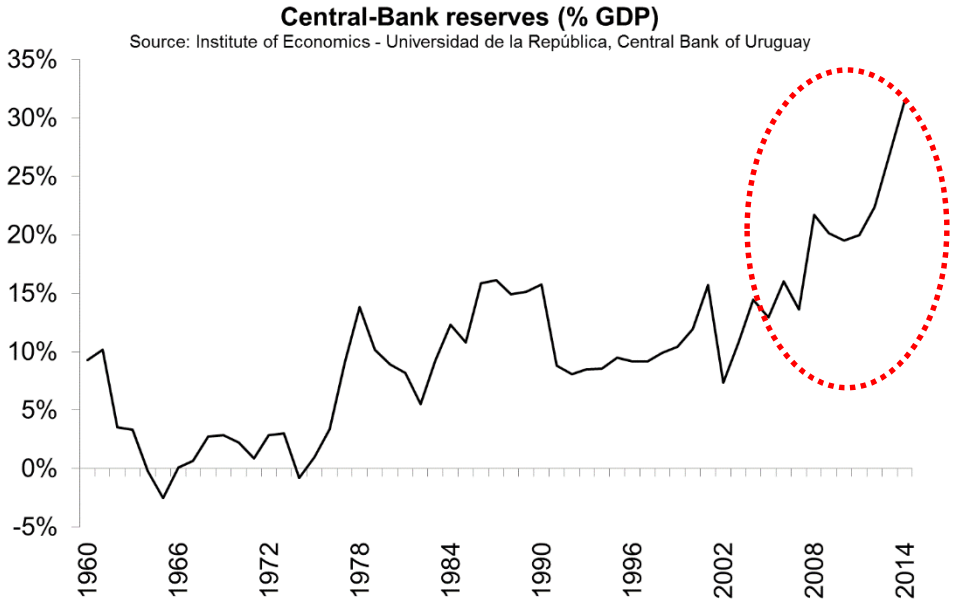




| | |
|---|---|
| ***Sources*** | |
| Local-currency public debt (Δ) | 0,2% |
| Foreign-currency public debt (Δ) | 0,1% |
| Inflation-indexed public debt (Δ) | 0,2% |
| Monetary base (Δ) | -0,4% |
| Inflation tax | 1,9% |
| **Total** | **2,1%** |
| ***Obligations*** | |
| Public-sector primary deficit | -0,8% |
| Local-currency return | - |
| Foreign-currency return | 1,6% |
| Inflation-indexed return | -0,1% |
| Transfers* | 1,4% |
| **Total** | **2,1%** |

- A stabilization plan based on an exchange-rate anchor started in December 1990. As a result, **inflation reached a one-digit figure in 1998 for the first time in thirty years**.
- The end of the Convertibility in Argentina in December 2001 led to: i) a **run on bank deposits (especially from non residents**) and ii) an increase in the **fiscal deficit as the recession deepened**. As consequence the Central Bank lost reserves.
- The rupture of exchange-rate **commitments** contributed to causing a banking crisis. Like in 1982, the **public sector partially absorbed the private-sector losses**.
- Given the high share of dollar-denominated public debt, **currency devaluation severely weakened (again) public finances and placed public debt on an unsustainable path.**

# The golden years (2004-2014)




| ***Sources*** | |
|---|---|
| Local-currency public debt (Δ) | 0,7% |
| Foreign-currency public debt (Δ) | -2,8% |
| Inflation-indexed public debt (Δ) | 1,6% |
| Monetary base (Δ) | 0,2% |
| Inflation tax | 0,6% |
| **Total** | **0,3%** |
| ***Obligations*** | |
| Public-sector primary deficit | -1,9% |
| Local-currency return | -0,1% |
| Foreign-currency return | -0,9% |
| Inflation-indexed return | -0,5% |
| Transfers* | 3,7% |
| **Total** | **0,3%** |

Strong foreign demand was **accompanied by public policies and reforms**:

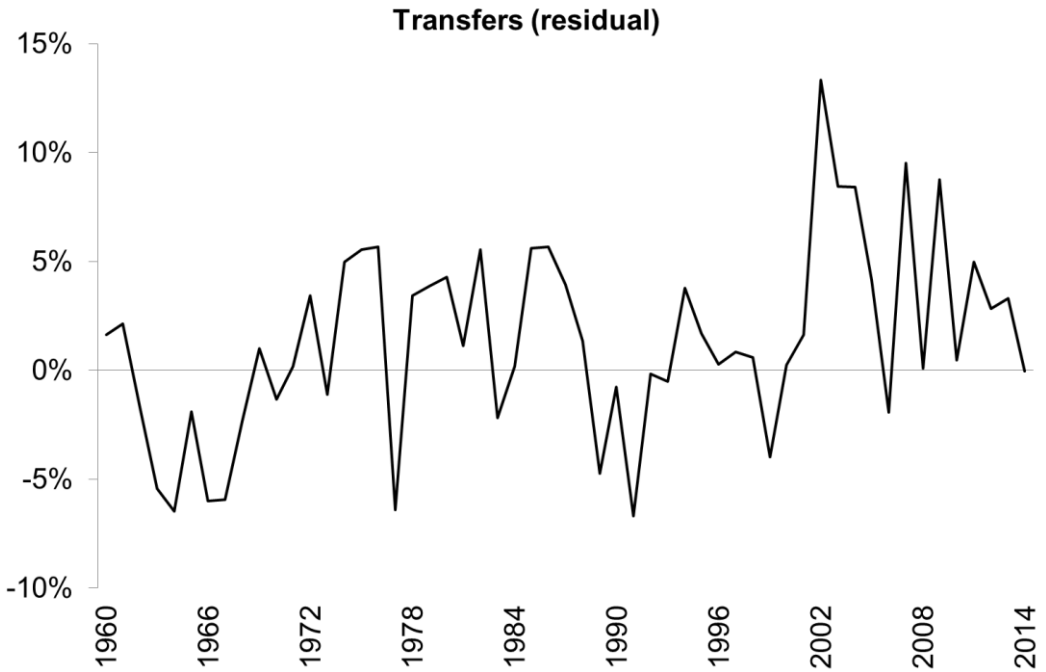
- Primary fiscal surpluses;
- **Exchange-rate flexibility** (inflation targets);
- Proactive management of **assets and liabilities of the public** sector.

| | % of gross public debt | |
|---|---|---|
| | **2001** | **2014** |
| **Debt with maturity < 1 year** | 13,1% | 12,2% |
| **Foreign-currency debt** | 82,2% | 43,7% |
| **Fixed-rate debt** | 43,2% | 78,9% |

Source: Central Bank of Uruguay

# Transfers (1960-2014): an special and partial explanation

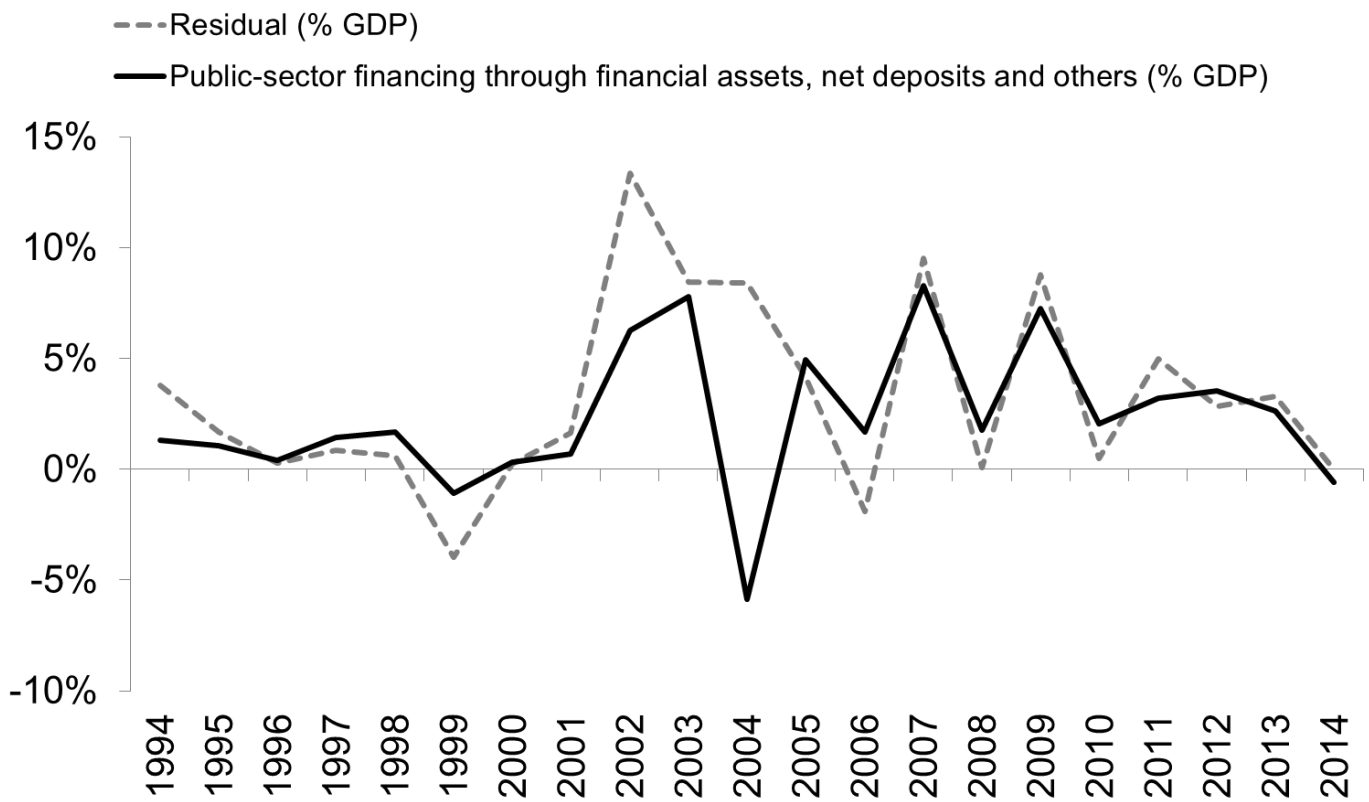
| | 1960-1973 | 1974-1985 | 1986-2003 | 2004-2014 |
|---|---|---|---|---|
| Transfers | -1,7% | 2,6% | 1,4% | 3,7% |




- **Transfers capture all the limitations in the data.**
- **Erratic path**, although the sign that prevails since the 1980s is positive.
- **Negative sign in the 1960s** could be explained by quasi-fiscal operations (*Banco República* granted loans with 0 interest rate to the Treasury up to 1/6 of the national budget).
- Positive sign in the 1970s, 1980s and the last decade may reflect **increases in Central-Bank reserves or in reserve requirements of the banking system.**
- In **2002**, the magnitude may show a **underestimation of the quasi-fiscal deficit**.

## Residual and public-sector financing through other sources

Source: Central Bank of Uruguay and own estimations



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# Conclusions

- **High inflation in the 1960s was associated with sustained fiscal deficits**. The opening of the economy started limiting the discretionary management of the economic policy, which resulted in less inflationary financing of fiscal deficits.
- The **economy demonetized** due to a persistently high inflation
- Although the inflation level significantly declined during the whole period, **the inflation tax was still important** to finance fiscal deficits.
- **During the 20th century, financial vulnerability of the public sector grew because of public-debt dollarization**. In contrast, in the **last decade** primary fiscal surpluses and the reduction of public debt denominated in foreign currency **reduced such vulnerability.**
- Between **1960 and 2014** Uruguay **reduced its budget constraint** and improved its fiscal balance.
- Evidence suggests that **in the last three decades governments have slowly understood the importance of fiscal constraints**.
- Overall, macroeconomic instability consolidated during the second half of the 20th century, promoting **impatient agents that demanded expected returns on their investments, which eventually affected growth**.

# Agenda

- Improving the **quality of the data**. This requires:
  - Collecting new information on the **stock of debt denominated in foreign currency for the 1960s**.
  - **Extending the price index of tradable goods** of Cancelo et al. (1994) which is included in Aboal (2003) and was used to estimate the RER series in this paper.
  - **Improving the estimations for fiscal deficits**, especially for those periods where these estimations were joined with official data.
- Calibrating Uruguay's data to the **other models** proposed in the conceptual framework of Kehoe, Nicolini & Sargent (2013).

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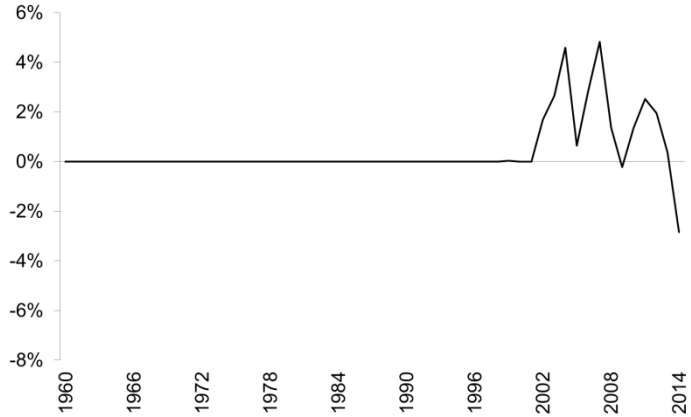
# From a closed to an open economy

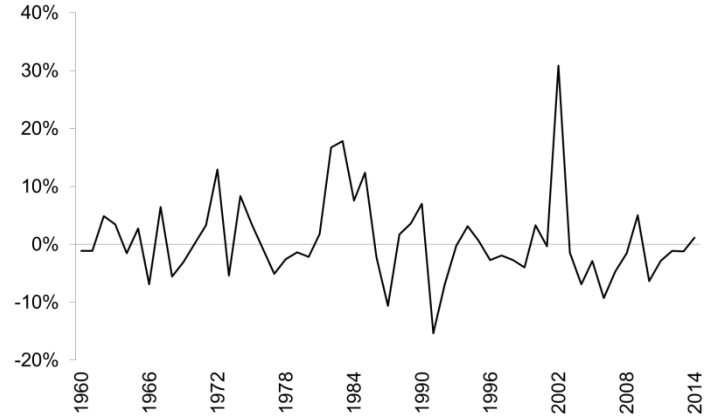
# Results of the budget-constraint exercise: sources

$\theta_t^N - \theta_{t-1}^N$

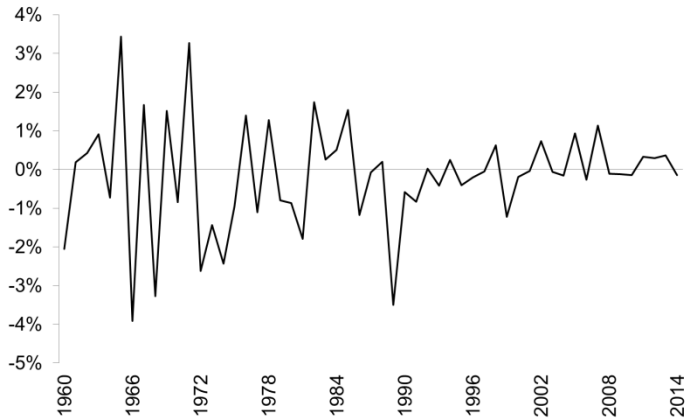
$\theta_t^r - \theta_{t-1}^r$



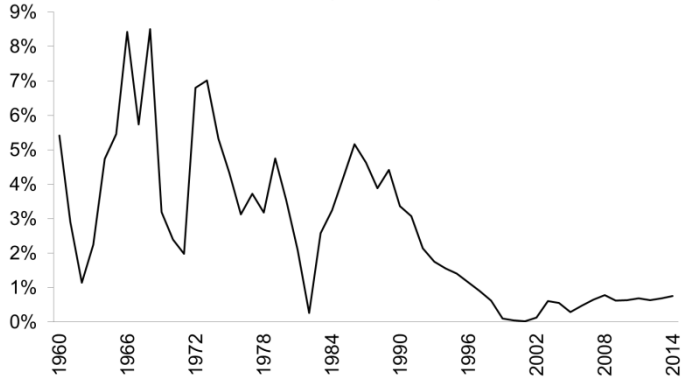

$\varepsilon(\theta_t^* - \theta_{t-1}^*)$




$m_t - m_{t-1}$



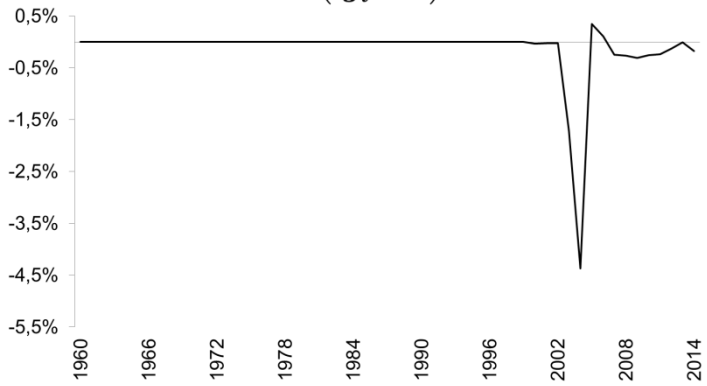

$m_{t-1}\left(1 - \frac{1}{g_t \pi_t}\right)$



# Results of the budget-constraint exercise: obligations

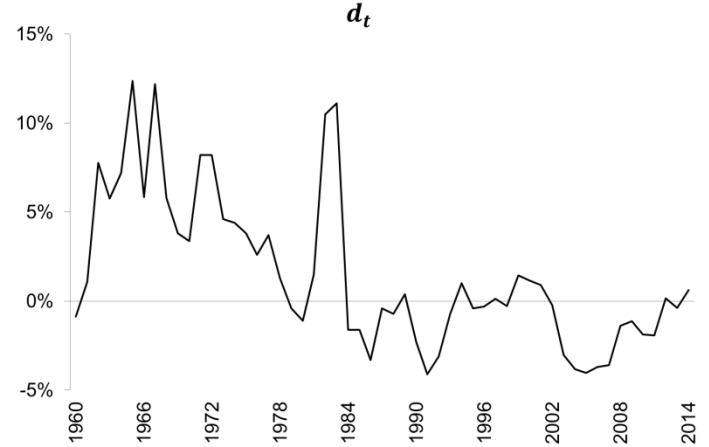
$$\theta^{N}_{t-1}\left(\frac{R_{t-1}}{\pi_t g_t}-1\right)$$

$$\theta^{r}_{t-1}\left(\frac{r_{t-1}}{g_t}-1\right)$$

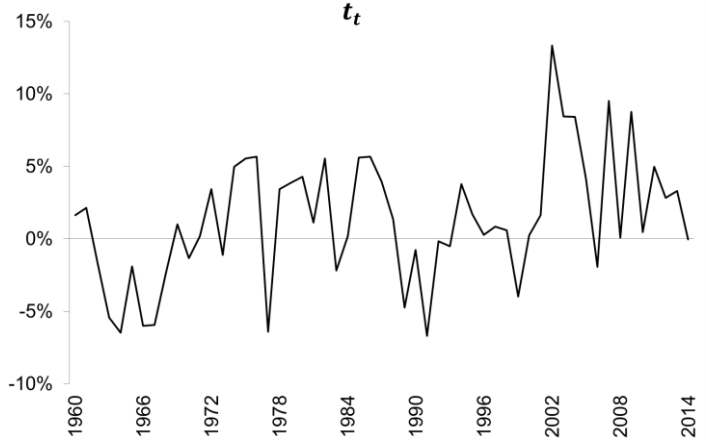



$$\varepsilon_t\theta^{*}_{t-1}\left(\frac{r^{*}_{t-1}}{g_t\pi^{w}_{t}}-1\right)$$

$d_t$




$t_t$



## Public-debt interest payments (% GDP)

Source: Instituto de Economía - Universidad de la República, Borchardt et al. (2000), Central Bank of Uruguay.

## Interest rate of public debt in foreign currency (%)

Source: Instituto de Economía - Universidad de la República, Borchardt et al. (2000), Central Bank of Uruguay, Debt Management Unit.