The Financial Origins of the Rise and Fall of American Inflation

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The Great Inflation (1965–1982)

1. A very influential period for macro and monetary economics
   - inflation got out of control despite high interest rates
   - Keynesian toolbox stopped working: high inflation and high unemployment (“stagflation”) → a crisis of understanding

2. Standard narrative blames the Fed
   - did not raise rates aggressively enough
     (Taylor coefficient < 1, shown by Clarida, Gali, & Gertler 2000)
     ⇒ Fed lost credibility → self-fulfilling higher inflation expectations
   - requires negative supply shocks to explain the “stag” part (e.g., oil)

3. Ended by Paul Volcker who restored Fed credibility
   - raised rates and kept them high despite severe 1981–82 recession
   - credited with lower inflation and longer expansions that followed (“Great Moderation”)
     ⇒ credibility view underlies monetary policy theory and practice today
The Great Inflation

1. Fed funds rate and CPI inflation, annual over following year:

![Graph of Fed funds rate and inflation from 1960 to 1988]

2. Inflation rose from 2% in 1965 to 14% in 1979
   - 1965.I: start of Great Inflation, sparked by hot economy and Vietnam buildup + Great Society
   - 1980.IV: Volcker’s credibility-restoring rate hike

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Stagflation

1. Real GDP growth is very negatively related to inflation
⇒ contradicts Phillips curve, which predicts inflation is high when GDP growth is high

2. GDP is very volatile: four recessions over this time period
We propose and test a new explanation for the Great Inflation

1. Due to imposition and repeal of Regulation Q
   - an important law that placed **hard ceilings on bank deposit rates**
   - deposits were the main form of saving for ordinary households
     → Reg Q suppressed the return to saving
   - disabled the transmission of monetary policy to households:
     → no passthrough of Fed funds rate to deposit rates
1. 1965.I: Reg Q deposit rate ceiling becomes binding
   - previously, Fed had increased it to keep it from binding
2. No passthrough of Fed funds rate to deposit rates
1. Real deposit rate increasingly negative:
   - from +2% in 1964 to −8% in 1979
   - in contrast, real Fed funds rate ∼ 0

⇒ Reg Q cost: real deposit rate × deposits / consumption ≈ 4% of consumption
A new explanation for the Great Inflation

2. How does Reg Q raise inflation?
   - suppressed return to saving $\rightarrow$ greater incentive to spend (aggregate demand $\uparrow$) $\rightarrow$ upward pressure on prices $\rightarrow$ higher inflation
   - spiral: higher inflation $\rightarrow$ lower real deposit rate $\rightarrow$ demand increases further $\rightarrow$ inflation increases further $\ldots$
   - similar to nominal rate peg as in Friedman (1968), but with Reg Q as the relevant peg

3. How does Reg Q lead to the “stag” in stagflation?
   - low real deposit rate $\rightarrow$ deposit outflows (e.g., wealthier households) $\rightarrow$ bank “disintermediation”
     $\Rightarrow$ credit crunch $\rightarrow$ firms can’t finance operations, investment $\rightarrow$ output falls, unemployment rises
   - this negative supply shock exacerbates inflation (low supply $+$ high demand)
Credit crunches and stagflation

1. High inflation → low real deposit rate → deposit outflows
2. Banks lose funding → credit crunch
   - "credit crunch" coined in 1966 to describe first such event right after imposition of Reg Q

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Credit crunches and stagflation

1. High inflation $\rightarrow$ low real deposit rate $\rightarrow$ deposit outflows
2. Banks lose funding $\rightarrow$ credit crunch
$\Rightarrow$ Output growth plummets

Drechsler, Savov, and Schnabl (2021)
A new explanation for the Great Inflation

4. What ended the Great Inflation?

- Reg Q effectively repealed in late 1978–79 with the introduction of new, deregulated deposit accounts
- deposit rates immediately shot up far above the old ceilings (+7%)
- households poured vast sums into the new accounts:
  $462 \text{ billion} = 16.2\% \text{ of GDP} (\sim \$3.5 \text{ trillion in 2019})
- removed incentive to spend, no more upward pressure on prices
2. Passthrough restored from near 0 to almost 1
3. Deposit rates immediately shot up far above the old ceilings
1. Real deposit rate shot up from $-8\%$ in 1979 to 0\% in ’80 and +4\% in ’81
2. Timing: Reg Q repealed right before inflation starts dropping
   - Volcker rate hike is 3 quarters after
1. Until Oct. 1973 the real oil price is actually decreasing (De Long, 1997)
   - in 1973 and 79 inflation mostly rises *before* oil shocks hit

2. Oil shocks cannot explain persistent inflation (Clarida, Gali, Gertler, 2000)
   - large differences in inflation across oil-consuming countries (UK vs. Germany vs. Japan)
1. Substitution from deposits to Treasuries pushed yields down towards the Reg Q ceiling

2. Low deposit growth → record-high Treasury premium
   - July 1974: T-Bill rate is 5.37% (!) below the Fed funds rate
   - End of Reg Q → liquidity premium collapses, returns to normal
History of Regulation $Q$

1. Enacted in 1933 following Depression bank failures

2. In order to prevent “excess competition” for insured deposits by banks wanting to take risk

3. Until 1965: the Fed kept the ceiling rate above the Fed funds rate $\to$ non-binding

4. In 1965: Fed stopped raising ceiling, letting it bind to slow money and credit growth

$\Rightarrow$ Fed believed Reg $Q$ was *reducing* inflation

- many countries imposed similar financial repression until 1980s deregulation (e.g., UK, France)

- imposed post-WW2 to help pay off war debt (Reinhart and Sbrancia, 2015)
Cross-sectional analysis

1. Aggregate time series supports the hypothesis that Reg Q led to the Great Inflation

2. To further test this hypothesis, we use cross-sectional variation in exposure to Reg Q and measure its impact on banks, inflation, and employment
   - controls for aggregate economic conditions and helps rule out alternative explanations, e.g., Fed credibility

3. Identification challenge: Exposure to Reg Q and inflation/employment may be responding to local economic conditions (omitted variable)

⇒ Three natural experiments covering rise and fall of Great Inflation:
   1. Reg Q first becomes binding (1965–66)
   2. NOW Account Experiment (1974–80)
Data

Deposits:


Inflation and employment:

1. CPI inflation and employment (BLS, 25 largest MSAs, 1965–90)
2. Wage inflation (nominal wage growth):
   - all private sector employees (BLS, 316 MSAs, 1975–90)
   - manufacturing employees (BLS, 169 MSAs, 1972–90)
Core deposits and Reg Q exposure

1. Banks fund themselves with core (retail) deposits and large time (wholesale) deposits
   - large time deposits (> $100,000) were exempted from Reg Q in 1970
   - banks with access to large time deposits can use them to offset core deposit outflows

⇒ Core deposit share of total deposits captures exposure to Reg Q

2. Historically persistent geographic variation
   - Savings and Loans (S&Ls) made up close to half the banking system and had no access to large time deposits
   - many smaller banks also had no access to large time deposits

⇒ some MSAs rely heavily on core deposits, others much less so (e.g. 88% core deposit share in San Diego and Baltimore vs. 52% in San Francisco and Boston)
Reg Q and credit crunches

Deposit growth\(t\) = \(\alpha_t + \beta_t\) Core Deposit Share\(_{i,1975.1}\) + \(\epsilon_{i,t}\)

1. When inflation/FF rate rises, deposit/asset growth drops \(\approx 20\%\) more in high Reg Q exposure MSAs
2. Consistent with 15\% peak-to-trough decline in aggregate deposit/asset growth \((= -20\% \times 75\%\) core deposit share\)
Credit crunches and employment

Employment Growth\(_{t+1}\) = \(\alpha_t + \beta_t\) Core Deposit Share\(_{i,1975.1}\) + \(\epsilon_{i,t}\)

1. Asset and employment growth co-move strongly in the cross section
   - when inflation/FF rate rises, employment growth drops by \(\approx 7\%\) more in high Reg Q exposure MSAs

2. Consistent with credit crunches causing the “stag” in stagflation

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Credit crunches and inflation

\[ \text{Inflation}_t = \alpha_t + \beta_t \text{Core Deposit Share}_{i,1975.1} + \epsilon_{i,t} \]

1. MSAs with more severe credit crunches have greater inflation
   - from 1975 to 79, inflation rises by \( \approx 10\% \) more in high Reg Q exposure MSAs
   - relationship ceases when Reg Q ends
Stagflation in the cross section

\[ \Delta y_{it} = \alpha_i + \delta_t + \beta \text{Core Deposit Share}_{i,1975} \times \text{Fed Funds}_t + \epsilon_{i,t} \]

<table>
<thead>
<tr>
<th></th>
<th>Deposits</th>
<th>Bank Assets</th>
<th>Inflation</th>
<th>Employment (2 yr)</th>
<th>Construction Emp. (2 yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Share × FF</td>
<td>-3.943***</td>
<td>-3.275***</td>
<td>0.652***</td>
<td>-1.137***</td>
<td>-4.386***</td>
</tr>
<tr>
<td></td>
<td>(0.608)</td>
<td>(0.625)</td>
<td>(0.199)</td>
<td>(0.272)</td>
<td>(1.005)</td>
</tr>
<tr>
<td>Time FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>MSA FE</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
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<td>925</td>
<td>925</td>
<td>925</td>
<td>925</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.111</td>
<td>0.078</td>
<td>0.035</td>
<td>0.258</td>
<td>0.198</td>
</tr>
</tbody>
</table>

1. When Inflation/FF rises, high Reg Q exposure areas see lower deposit and bank asset growth (credit crunches), higher inflation, and lower 2-year employment growth
   - exposure to Reg Q induces “stagflation” in the cross section
   - stronger effect on the highly credit-dependent construction sector
NOW Account Experiment (middle of Great Inflation)

1. In 1972, a small bank in Worcester, MA, created the “NOW Account” (interest-paying checking account, 0 → 5%)

2. Violated Reg $Q$ → other banks sued for “unfair” competition

3. In surprise move, MA Supreme Court authorized NOW accounts for state-chartered banks

4. National banks now lobbied D.C. to allow NOW accounts → in 1974, Congress authorized NOW Accounts in MA and NH only

5. Hugely popular: 80% penetration rate in MA

6. Staggered roll-out to neighboring states by geographic proximity
- NOW Account Experiment starts in MA and NH in 1974.I
Staggered roll-out in North East

- Expands to rest of New England in 1976.I
Staggered roll-out in North East

- Expands to New York in 1978.I

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Staggered roll-out in North East

- Expands to New Jersey in 1979.I
Staggered roll-out in North East

- Expands to all of U.S. in 1980.IV
Empirical strategy: NOW Account Experiment

1. A partial repeal of Reg Q

2. Exploit staggered roll-out for identification:

\[ \text{Inflation}_{it} = \alpha_i + \gamma_t + \beta \text{Deregulated}_{it} + \varepsilon_{it} \]

\[ \text{Deregulated}_{it} = \text{Indicator variable if MSA}_{it} \text{ allows NOW accounts} \]

3. Identification assumption: Roll-out driven by geographic proximity, not local inflation or economic activity
Results: NOW Account Experiment

\[ \text{Inflation}_{it} = \alpha_i + \gamma_t + \beta_t \text{Deregulated}_{it} + \varepsilon_{it} \]

1. Introduction of NOW Accounts lowers inflation rate
   - effect is largest in earlier states, where NOW account penetration was highest
Results: NOW Account Experiment

\[
\text{Inflation}_{it} = \alpha_i + \delta_t + \beta \text{Deregulated}_{it} + \varepsilon_{it}
\]

<table>
<thead>
<tr>
<th></th>
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<th>Wage inflation (all)</th>
<th>Wage inflation (manuf.)</th>
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<tr>
<td></td>
<td>(1)</td>
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<tr>
<td>Deregulated</td>
<td>−1.203***</td>
<td>−1.228***</td>
<td>−1.400***</td>
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<td>(0.426)</td>
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<td>(0.358)</td>
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<td>MSA FE</td>
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</tr>
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<td>State FE</td>
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<td>1,300</td>
<td>10,021</td>
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<td>MSAs</td>
<td>25</td>
<td>25</td>
<td>315</td>
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<tr>
<td>( R^2 )</td>
<td>0.903</td>
<td>0.910</td>
<td>0.603</td>
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</table>

⇒ Introduction of NOW Accounts lowers inflation rate by \(\sim 2.4\%\)

Drechsler, Savov, and Schnabl (2021)
The Repeal of Reg Q (the end of the Great Inflation)

1. Congress effectively repealed Reg Q by introducing two deregulated small-time deposits (CDs): MMCs and SSCs in 1978.III and 1979.III

⇒ Examine impact of local take-up of deregulated deposits on inflation

2. Identification challenge: take-up may be responding to local economic conditions

⇒ Instrument take-up with 1975 share of small time deposits:
   - checking, savings and time deposits differ in their maturity and liquidity (imperfect substitutes)
   - take-up should be larger in areas that had more small-time deposits in the past
   - 1975 economic conditions were very different than in 1978 (trough vs. peak of inflation cycle)

Drechsler, Savov, and Schnabl (2021)
### OLS: inflation

\[ \text{Inflation}_{it} = \alpha_i + \delta_t + \beta \text{MMC Share}_{it} + \varepsilon_{it} \]

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<thead>
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<th>(1)</th>
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<th>(3)</th>
<th>(4)</th>
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<tbody>
<tr>
<td>MMC share</td>
<td>-0.240***</td>
<td>-0.273***</td>
<td>-0.259***</td>
<td>-0.268***</td>
</tr>
<tr>
<td></td>
<td>(0.064)</td>
<td>(0.067)</td>
<td>(0.076)</td>
<td>(0.078)</td>
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<td>Inflation, pre-period</td>
<td>0.200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.140)</td>
<td></td>
<td></td>
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<tr>
<td>Time FE</td>
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<tr>
<td>MSA FE</td>
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<td>No</td>
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<td>Yes</td>
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<td>Controls</td>
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<tr>
<td>Obs.</td>
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<td>300</td>
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<tr>
<td>( R^2 )</td>
<td>0.577</td>
<td>0.588</td>
<td>0.835</td>
<td>0.836</td>
</tr>
</tbody>
</table>

1. Large, very significant relation between MMC take-up and inflation
   - robust to controlling for pre-period inflation
   - coefficient magnitude can explain full drop in aggregate inflation

*Drechsler, Savov, and Schnabl (2021)*
IV: first stage

1. Binscatter plot, 316 MSAs

MMC take-up vs. 1975 small-time deposit share

2. Large variation in small-time deposit share and in MMC take-up

⇒ 1975 small-time share strongly predicts MMC take-up

Drechsler, Savov, and Schnabl (2021)
### IV: inflation

Inflation\(_{it} = \alpha + \delta_t + \beta \text{MMC Share}_{it} + \varepsilon_{it}\)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
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<tr>
<td>MMC share</td>
<td>−0.243***</td>
<td>−0.312***</td>
<td>−0.286***</td>
<td>−0.354***</td>
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<tr>
<td></td>
<td>(0.086)</td>
<td>(0.095)</td>
<td>(0.100)</td>
<td>(0.108)</td>
</tr>
<tr>
<td>Past inflation</td>
<td>0.227</td>
<td></td>
<td>0.215</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.148)</td>
<td></td>
<td>(0.147)</td>
<td></td>
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<td>Time FE</td>
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<td>Yes</td>
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<td>Controls</td>
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<td>Obs.</td>
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<td>300</td>
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<tr>
<td>Weak IV p-val</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

1. IV coefficients are very similar to OLS
   - robust, economically large, and highly significant
   - coefficient magnitude can explain full drop in aggregate inflation
IV: wage inflation

$\text{Wage inflation}_{it} = \alpha_i + \delta_t + \beta \text{MMC Share}_{it} + \varepsilon_{it}$

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMC Share</td>
<td>$-0.159^{***}$</td>
<td>$-0.157^{***}$</td>
<td>$-0.144^{***}$</td>
<td>$-0.143^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.027)</td>
<td>(0.026)</td>
<td>(0.028)</td>
</tr>
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<td>Past wage infl.</td>
<td>$-0.015$</td>
<td></td>
<td>$-0.008$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.048)</td>
<td></td>
<td>(0.045)</td>
<td></td>
</tr>
<tr>
<td>Time FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Controls</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Obs.</td>
<td>3,615</td>
<td>3,555</td>
<td>3,615</td>
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<tr>
<td>Weak IV $p$-val</td>
<td>0.009</td>
<td>0.005</td>
<td>0.004</td>
<td>0.002</td>
</tr>
</tbody>
</table>

1. Large, highly significant impact of MMC take-up on wage inflation
   - 100% increase in MMC take-up $\rightarrow$ reduces wage inflation by 16%
   - can explain the aggregate decline in wage inflation
Inflation: timing

\[ \Delta \text{Inflation}_{i,78.III \rightarrow t} = \alpha_t + \beta_t \text{MMC Share}_{i,1981.III} + \epsilon_{i,t} \]

1. Cross-sectional effect of take-up occurs right at time of deregulation
   - leads aggregate by 3 quarters → inflation declined earlier in high take-up areas; followed soon by rest of US
Takeaways

1. Propose and test a new explanation for the Great Inflation
   - due to Reg Q, which disabled monetary policy passthrough and created credit crunches

2. We present evidence that the Great Inflation was due to a large financial friction, not the Fed’s policy rule
   - once the friction was removed, inflation returned to low levels (as in most of history) and macro volatility declined
   - explains the “stagflation,” which was unexplained

⇒ Explains why high inflation has not been “just around the corner”
   - e.g., 2015

⇒ Reconciles eras: Great Inflation and post-2008 low inflation
   - Reg Q: deposit-rate ceiling → high inflation
   - ZLB: deposit-rate floor → low inflation
Appendix
1. Inflation drops soon after deregulation, but 3 quarters before Volcker's hike in 1980.IV
   - by 1980.III inflation already was less than 8%

2. Inflation expectations stayed high: 10-year rate at pre-Volcker levels until 1985!
   ⇒ investors expected inflation to return, goes against credibility view
1. Inflation was low before and after the Great Inflation

2. The Great Inflation is a historical anomaly
1. Reg Q became binding for banks in 1965.

2. S&Ls were exempt from Reg Q until September 1966
   - due to being regulated by FHLBB, not Fed

⇒ Reg Q less binding in S&L dominated areas over 1965.I–66.III
   - these areas should see less inflation increase

3. Identification assumption: S&L share is predetermined, not picking up other factors driving inflation in 1965–66
   - historically determined and highly persistent
S&Ls and inflation, 1965–66

\[ \pi_{i,t-1 \rightarrow t+1} = \alpha_t + \beta_t (S&L \ Share)_{i,1966.III} + \epsilon_{i,t} \]

1. Shows inflation increases less in S&L-dominated areas once Reg Q becomes binding for banks in 1965.I
   - gap disappears once S&Ls become subject to Reg Q in 1966.III

2. Coefficient large enough to explain aggregate inflation increase (\(\sim 3\%\))

Drechsler, Savov, and Schnabl (2021)
### S&Ls and inflation, 1965–66

<table>
<thead>
<tr>
<th></th>
<th>Inflation (1966.I)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>S&amp;L share</td>
<td>$-0.028^{**}$</td>
<td>$-0.029^{**}$</td>
<td>$-0.027^{**}$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$(0.012)$</td>
<td>$(0.012)$</td>
<td>$(0.012)$</td>
<td></td>
</tr>
<tr>
<td>Deposit growth</td>
<td>0.035</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$(0.092)$</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Asset growth</td>
<td>0.136</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$(0.102)$</td>
<td></td>
<td></td>
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<tr>
<td>Constant</td>
<td>$0.063^{***}$</td>
<td>$0.061^{***}$</td>
<td>$0.054^{***}$</td>
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</tr>
<tr>
<td></td>
<td>$(0.005)$</td>
<td>$(0.007)$</td>
<td>$(0.008)$</td>
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<tr>
<td>Obs.</td>
<td>25</td>
<td>25</td>
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<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.198</td>
<td>0.203</td>
<td>0.257</td>
<td></td>
</tr>
</tbody>
</table>

1. Shows inflation was 2.7% lower in 1966.I in S&L-dominated areas

2. National inflation rose by $\sim 2.7\%$ between 1965.I and 1966.III, when Reg Q became binding everywhere

$\rightarrow$ Reg Q can explain the increase in aggregate inflation
1. German inflation was substantially lower than other developed countries

2. Germany eliminated deposit-rate caps in 1967 ⇒ German savings deposit rates were very sensitive to the short-term rate
   - German real deposit rate remains positive for much of this period

*Drechsler, Savov, and Schnabl (2021)*
1. Consumption growth is highly correlated with the real deposit rate (74% correlation)

⇒ Euler equation holds using actual rate households get (implied EIS ∼ 1)
  - does not hold for real Fed funds rate
Median household asset allocation

1. Data from first Survey of Consumer Finances (1983):
   - 94% of 5th decile households had deposits vs 15% stocks, 4% MMF

<table>
<thead>
<tr>
<th>Total financial assets</th>
<th>Liquid assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chk Dep</td>
<td>Time Dep</td>
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<tr>
<td>6%</td>
<td>6%</td>
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<tr>
<td>39%</td>
<td>6%</td>
</tr>
</tbody>
</table>

2. Median household had 28% of total assets in deposits

3. 76% of liquid assets → important for marginal savings

Drechsler, Savov, and Schnabl (2021)