Macroeconomic forecasting: A monetarist view

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Money, prices and output: the fundamentals
The Quantity Theory of Money

\[ MV = PT, \text{ a truism} \]

The truism becomes a **theory** when an appeal is made to economic behaviour.

We propose that \( V \) is determined by variables other than the quantity of money and is **relatively stable**

\( V \) being the inverse of the Demand for Money

Stability of \( V \), particularly in ‘normal’ (no crisis) times
The ratio of money held by households to their net worth is virtually the same today as it was 70 years ago, despite some fluctuations in the ratio in the intervening period, which may be explicable by the own rate on money balances.
The Quantity Theory of Money

What if $V$ is not just stable, but constant?

Then % changes in $M$ will be accompanied by the same % changes in $PT$. If $M$ rises by 10%, then $PT$ also rises by 10%.

This is the so-called “proportionality hypothesis”
The Quantity Theory of Money: does it work?

US broad money and nominal income growth

<table>
<thead>
<tr>
<th>Period</th>
<th>% annual growth rate:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M3</td>
</tr>
<tr>
<td>1960 – 2018</td>
<td>7.4</td>
</tr>
<tr>
<td>1960 – 1970</td>
<td>7.7</td>
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<tr>
<td>1971 – 1980</td>
<td>11.4</td>
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<tr>
<td>1981 – 1990</td>
<td>7.7</td>
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<tr>
<td>1991 - 2000</td>
<td>5.6</td>
</tr>
<tr>
<td>2001 - 2010</td>
<td>7.1</td>
</tr>
<tr>
<td>Eight years to 2018</td>
<td>4.0</td>
</tr>
</tbody>
</table>
The Quantity Theory of Money: does it work?

M3 Data from National Central Banks and Nominal GDP Data from various sources.
Policy recommendations: how much money to issue?

For advanced economies, keeping a **stable rate of growth of money** (approx. 4-5% p.a.) is key to achieve sustainable economic growth over the long term, and avoid inflation and deflation.

This is compatible with 0-2% inflation and 2% trend output growth.

This implies that real money growth should be around **2% per annum**.
If an increase in the amount of money

**Portfolio adjustment**

Agents will increase their demand of other assets: equity, real estate, bonds, ... thus increasing their price

**Direct effect:** Stronger firms’ balance sheets: greater investment and employment

**Indirect effect:** Higher asset prices; agents will increase their demand of goods and services (‘wealth effect’)

The Quantity Theory of Money: does it work?

In the long run the growth rates of real broad money and real GDP are similar, if with some tendency in many countries for money to grow a little faster with greater financial sophistication.

However, the effect is not immediate: 2-3 quarters lag for GDP changes and 4-5 quarters lag for changes in CPI prices (depending on the output gap).

Let us take the trend growth rate of real output to be 2% a year (UK for much of the last 50 years).
Money and the business cycle

• If real money growth is **much above 2%** a year, expect strong asset price inflation and above-trend growth in demand and output.

• If real money growth is **much beneath 2%** a year, expect weak asset price inflation (or even falling asset prices) and beneath-trend growth in demand and output (or even a recession).
Growth of GDP in the UK, 1964 - 2017
- % annual increases

Nominal GDP
Real GDP
Chart 1: Growth rate of nominal broad money in the UK, 1964 - 2015

Annual % growth rate of M4 until Q4 1998 and M4x from Q4 1998, quarterly

Actual data, quarterly
Average, 1964 - 2015
Chart 2: Growth rate of real broad money in the UK, 1964 - 2015

Annual % growth rate of nominal M4/M4x, adjusted for change in GDP deflator

Actual data, quarterly

Average, 1964 - 2015

Average annual % increases:

Nominal broad money 10.1
Nominal GDP at mkt. prices 8.3
Real broad money 4.1
Real GDP 2.4
Application to portfolio/asset allocation decisions along the business cycle
• When output is above its trend level so the economy has a positive ‘output gap’, the change in inflation is positive, i.e., inflation is rising.

• When output is beneath its trend level so the economy has a negative ‘output gap’, the change in inflation is negative, i.e., inflation is falling.
A four-phase business cycle

The Business Cycle

Peak
Recession
Trough
Expansion
The business cycle and inflation (1)

<table>
<thead>
<tr>
<th>Recovery</th>
<th>Expansion</th>
<th>Downturn</th>
<th>Recuperation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Phase 2</td>
<td>Phase 3</td>
<td>Phase 4</td>
</tr>
<tr>
<td>Output gap negative</td>
<td>Output gap positive</td>
<td>Output gap positive</td>
<td>Output gap negative</td>
</tr>
<tr>
<td>Inflation falling</td>
<td>Inflation rising</td>
<td>Inflation rising</td>
<td>Inflation falling</td>
</tr>
<tr>
<td>Above-trend growth</td>
<td>Above-trend growth</td>
<td>Beneath-trend growth*</td>
<td>Beneath-trend growth*</td>
</tr>
</tbody>
</table>

* Or even falling output (i.e., recession), although falling output is unusual in the recuperation phase.

Straight line through origin corresponds to zero output gap, space beneath is of negative output gap, etc.
The business cycle and inflation (2)

Fluctuations in asset prices along the business cycle

To note that profit shares are highly pro-cyclical, and that equities are capitalisations of profits/dividends
The business cycle and inflation (3)

- **Recovery.** Above-trend growth and **falling** inflation of goods and services. Good macro news. Above-trend growth of real broad money and, in association with that, financial sector growing faster than household money. **Asset prices** – particularly equities – rising faster than prices of goods and services.

- **Expansion.** Above-trend growth and rising inflation of goods and services. Money being transferred to companies to finance expansion.
The business cycle and inflation (4)

- **Downturn.** Beneath-trend growth/falling output and **rising** inflation *of goods and services*. Bad macro news. Beneath-trend growth of real broad money and, in association with that, financial sector growing more slowly than household money, or falling. **Asset prices** – particularly equities – rising more slowly than prices of goods and services, *or falling*.

- **Recuperation.** Beneath-trend growth and **falling** inflation *of goods and services*. Balance sheets being straightened out, as agents try to recover ‘monetary equilibrium’.
The business cycle and asset inflation

**Recovery**
- Phase 1
  - Output gap **negative**
  - General Inflation *falling*
  - Asset prices *rising*, esp. equity market

**Expansion**
- Phase 2
  - Output gap **positive**
  - Inflation *rising*
  - Asset prices *rising*, esp. property

**Downturn** *
- Phase 3
  - Output gap **positive**
  - Inflation *rising*
  - Asset prices weak/falling

**Recovery**
- Phase 4
  - Output gap **negative**
  - Inflation falling
  - Asset prices stable?

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* Stock market crashes tend to come after peak in output growth, when interest rates are rising to counter undue inflation

**Straight line through origin corresponds to zero output gap, space beneath is of negative output gap, etc.**
Important caveats

• Monetary information isn’t everything – and cross-checks are needed to reliable advance pointers to demand from leading indicator indices.

• This approach assumes that there are no big changes in the supply side of the economy (no supply shocks)
Prospects for 2020/2021
<table>
<thead>
<tr>
<th>Name of country/jurisdiction</th>
<th>Share of world output</th>
<th>Growth rate of broad money</th>
<th>Comment</th>
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<tbody>
<tr>
<td></td>
<td>In purchasing-power parity terms, %</td>
<td>In current prices and exchange rates, %</td>
<td>In last three months at annualised rate, %</td>
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<tr>
<td>USA</td>
<td>15.1</td>
<td>23.3</td>
<td><strong>10.5</strong></td>
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<tr>
<td>China</td>
<td>18.7</td>
<td>16.1</td>
<td><strong>9.3</strong></td>
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<td></td>
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<tr>
<td>Eurozone</td>
<td>10.6</td>
<td>16.4</td>
<td><strong>4.3</strong></td>
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<tr>
<td>Japan</td>
<td>4.2</td>
<td>5.9</td>
<td><strong>2.3</strong></td>
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<tr>
<td>India</td>
<td>7.7</td>
<td>3.3</td>
<td><strong>11.8</strong></td>
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<tr>
<td>UK</td>
<td>2.2</td>
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<td><strong>4.5</strong></td>
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Recent trends in US money growth

% M3 growth rates, with M3 estimated by Shadow Government Statistics