“I have directed our new Council on Wage and Price Stability to find and expose all restrictive practices, public or private, which raise food prices.”

U.S. President Gerald R. Ford, October 1974

UNDERSTANDING STAGFLATION

P A S T

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VIVEK MOORTHY

DOUBLE WHAMMY FOR RBI: RETAIL INFLATION SURGES, IIP CONTRACTS

RUSSIA IS FACING STAGFLATION, CENTRAL BANKER SAYS

GOVT INCREASES RAILWAY FARES BY UP TO 25%, AFTER A DECADE

INDIA’S GROWTH FALTERS WHILE INFLATION RISES

10
9
8
7
6
5
4
3
2
1
0

2003-2008
2008-2013

2003-2008
2008-2013

$/Barrel, Crude Oil

KIPPER WAR

IRANIAN REVOLUTION

BUSINESS STANDARD DEC 2013

WALL STREET JOURNAL JAN 2014

BUSINESS STANDARD JAN 2013

NewBook_Moorthy.indb 1 11/8/2014 12:07:29 PM
UNDERSTANDING STAGFLATION

PAST & PRESENT

VIVEK MOORTHY

PROFESSOR, ECONOMICS AND SOCIAL SCIENCES AREA
INDIAN INSTITUTE OF MANAGEMENT BANGALORE (IIMB)
BANGALORE, INDIA

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Understanding Stagflation: Past & Present

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Author’s Profile

Vivek Moorthy is a Professor in the Economics and Social Sciences Area. He obtained his Masters at Jawaharlal Nehru University and Doctorate in economics from the University of California, Los Angeles. At IIM Bangalore, he teaches core and elective courses in Macroeconomics and Financial Markets. Prior to joining IIM Bangalore, he was with the Federal Reserve Bank of New York, first in the Domestic Research Function and then as Senior Economist in the Foreign Exchange Function. After joining IIM Bangalore, he has been Visiting Professor at the University of Ottawa, Canada; Jawaharlal Nehru University, New Delhi; National Institute of Public Finance and Policy, New Delhi; Sciences Politiques, Lille, France and Claremont Graduate University, California.

His interests range across labour markets, monetary and fiscal policy, global financial markets and banking, with a focus on public policy. His thesis and early research was on labour market aspects of business cycles, and his 1990 article traced the puzzle of the post 1981 US Canada unemployment gap to Canada’s 1971 legislation. His findings on unemployment insurance were prominently cited in the New York Times and covered in depth in the Canadian press. At the Federal Reserve Bank of New York, he worked on U.S. economy forecasts in the Domestic Research Division. He has authored and coauthored Federal Reserve Bank of New York staff studies and reports on monetary policy targets, on foreign exchange and financial market developments.

His international and Indian journal publications have been mainly on interest rates and exchange rates. His debate in 1995 in the Economic Times with a former Reserve Bank of India Governor culminated in a research study in 2000 of India’s public debt, of which he was the principal author. He has written for the following newspapers and magazines in India and abroad – the Economic Times, Business Line, mint, Financial Express, the Far Eastern Economic Review, and the Wall Street Journal – on macroeconomic issues, and also on transport policy. His minor website unclogroads.com contains some of his articles strongly advocating the imposition of a revenue neutral Vehicle Area Levy.

He is finishing up a comprehensive textbook titled Macroeconomics: An Integrated, Financial Approach for use at the intermediate undergraduate, Master’s and MBA level. Parts of this book Understanding Stagflation form a part of the bigger book. The table of Contents and Salient Features of the bigger text are outlined in his main website economicsperiscope.com, mainly a chronological list of publications.
Preface to This Book and Guide for Readers

To begin with, the main motivation in writing this book is to explain the largely misunderstood phenomenon of stagflation, which, at present, India and other emerging economies are facing. The macroeconomic textbooks that are widely used fail to adequately analyze the 1970s stagflation. Further, the major textbooks generally do not cover emerging economy macroeconomic issues and problems, of which the ongoing stagflation is a major one.

This book explains both the US stagflation of the 1970s as well as the ongoing stagflation. This explanation is based on an approach I have been teaching here at the Indian Institute of Management, Bangalore since 1995. The content of Part One of this book largely comprises Chapters 5 and Chapter 6 of the main text that I am writing (Macroeconomics: An Integrated Financial Approach). Henceforth this main text is referred to as MIFA. This much smaller book Understanding Stagflation: Past and Present, I will refer to as USPAP. Please keep these acronyms in mind.

While a text is meant mainly for students and tends to be formulaic, this book is meant for a wider audience – in particular, all those who have been interested in and have been following the Indian economy for the last several years or more. In particular, various economists, policy makers, journalists, some CEOs, management consultants, equity analysts and fund managers should (hopefully) find that this book provides the vital analytical foundations to examine their specific topic of interest.

A macro text deals with a wide range of topics, stagflation is just one of them. The major common topics are:

(i) GDP accounting, the components of GDP and their determination,
(ii) Various aspects of the Depression and 2008 crisis – the role of asset bubbles and then deleveraging.
(iii) The Keynesian multiplier concept and fiscal policy to counteract recessions, deficits and debt.
(iv) The whole gamut of monetary policy – the multiple expansion of credit and money supply via the banking system, money multiplier formulae, instruments, targets and goals of monetary policy.
(v) Open economy – Balance of Payments and its links to GDP and money supply data, the impact on exchange rates and interest rates and forex reserves of capital flows, associated capital account policies.
(vi) The labour market and the real sector: the expectations augmented Phillips curve, which I call the Inflation Adjusted Phillips Curve (IAPC). Within this topic, supply shocks and the ensuing stagflation.

Although all of the above topics are covered in the widely used textbooks, the last topic (vi) does not get the attention it deserves. Going through recent policy documents of central banks in emerging economies, it is evident that the variables and coefficient values discussed mostly pertain to output gap and inflation expectations. In macroeconomics, the IAPC should be given more emphasis relative to the other topics, which this book does.

In Part B, there is a large amount of factual detail here pertaining to economic outcomes in India and other emerging economies. It cites at length and critiques various policy makers and influential economic commentary. Nevertheless, this is not a book about the Indian economy, as the following discussion clarifies.

Macroeconomics as a subject lies somewhere between physics with universal laws and say, political history, which is mostly country specific documentation and narrative. There is no
Preface to This Book and Guide for Readers

such thing as Indian physics and it would be absurd to write a book about it. One must ask: does it make sense to write a book or teach a course about the Indian economy? There is no clear answer to this question.

In my opinion, the suitable approach for macroeconomics is somewhere in between: to explain the broad principles, drawing upon economic history. An analogy may help explain my approach. A seismologist could write a book about soil formation and earthquake risk in the Terai region, with enormous detail about local conditions. But the book itself must be rooted in principles of seismology, and not be a mere accumulation of Terai topsoil. The assessment of earthquake risk would be convincing if it uses evidence from soil in another continent. Similarly the analysis of stagflation would be valid if it holds in other countries and periods. What this book is meant to do is explain stagflation outcomes using principles of classical macroeconomics, with detailed evidence about USA and India.

A related purpose of this book is to raise the level of macroeconomic understanding in India (and perhaps some other emerging economies). India’s economy has been greatly liberalized since 1991 – indeed, one can argue that the external financial sector has been over-liberalized. Nevertheless the macroeconomic views of the liberalizers and the media are pre 1991 and mostly Keynesian. Inflation is generally considered to be a problem of food inflation and due to food supply shocks, contrary to the classical view developed here. If this book succeeds in making policy makers and the various economists and commentators who influence them understand and accept classical macroeconomics and associated policy recommendations, it will have contributed to improving India’s economic performance in the years ahead.

This e-book version has been completed up to Chapter 5. For students using this in my course, this table below provides a guide to connect the Detailed Table of Contents for this book (USPAP) with the Table of Contents for the bigger book (MIFA), provided at the end of this book.

A special acknowledgement is due to Anupam Manur, my research associate, for his outstanding help, without which this book would not have been completed. I also thank Shrikant Kolhar, my former doctoral student, whose research on food prices have been incorporated into this book.

Corresponding Sections of USPAP and MIFA

<table>
<thead>
<tr>
<th>Chapter Number in USPAP</th>
<th>Location in Bigger Text MIFA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1: Speeding Along the GDP Autobahn</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Chapter 2: Building the Framework for Macroeconomic Analysis</td>
<td>Parts of Chapter 1</td>
</tr>
<tr>
<td>Chapter 3: The Phillips Curve and Inflation</td>
<td>Identical to Chapter 5</td>
</tr>
<tr>
<td>Chapter 4: Cost Push, Demand Pull and Stagflation</td>
<td>Identical to Chapter 6 (Part A)</td>
</tr>
<tr>
<td>Chapter 5: Dissecting India’s Ongoing Stagflation</td>
<td>Identical to Chapter 6 (Part B)</td>
</tr>
</tbody>
</table>

Bangalore
20 January 2014
(and with minor revisions to text in October 2014)

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Comments, criticism and general feedback, from one and all, are welcome.
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Sections on other countries to be added
List of Symbols, Terms, Acronyms, and Abbreviations

Unless otherwise specified, small letters denote real (i.e. inflation adjusted) values and capital letters denote nominal (at current prices) values. A bar denotes an exogenous variable. The list of variables have been divided into subsections below.

y denotes real output.
P denotes the price level.
Y denotes nominal output.
g denotes growth rate of relevant subscripted variable. e.g. g_y denotes real GDP growth.
t subscript denotes time period.
exp (or e) normally superscript denotes expected value
y* denotes potential or trend output.
aftOR Adjusted for trend Output Ratio
ADSGAP Aggregate Demand – Supply Gap (equals aftOR – 100).
CPI denotes the Consumer Price Index.
WPI denotes the Wholesale Price Index.
π denotes inflation rate, as a percentage.
U or URATE is the unemployment rate
LRE denotes Long Run Equilibrium. When the economy is in LRE, y = y*.
NRH Natural Rate Hypothesis which applies in LRE.
U* is the natural rate of unemployment that prevails in Long Run Equilibrium (LRE)
Lokun The linking Okun coefficient between Unemployment and aftOR

Commonly Used Acronyms:

USPAP Understanding Stagflation: Past and Present
MIFA Macroeconomics: An Integrated Financial Approach (Full macroeconomic text in progress)
IAPC/EAPC Inflation Adjusted Phillips Curve or Expectations Augmented Phillips Curve
SRPC Short Run Philips Curve
LRPC Long Run Philips Curve
MEW Macroeconomic Welfare
1.3 **From Mild Optimism to Extreme Euphoria: The Second BRICS Report**

See corresponding section on hardcopy handout......

1.4 **The Unexpected Deceleration**

Unfortunately, these euphoric predictions have turned out to be wrong. After India’s 9% hatrick from 2005 to 2007, there was a big drop during the Lehman Brother’s financial crisis of 2008, followed by two very strong years largely reflecting policy stimulus and huge government expenditure. However since 2010, India’s economy has slowed hugely, dropping below 5% for four quarters in a row, including the latest two quarters (April-June and July-September 2013) not shown in the Chart. A similar drop in GDP growth has occurred for Brazil, Indonesia and many emerging economies. Brazil’s economy has just been reported to have contracted (negative growth) in the July-September quarter of 2013. The following Chart plots GDP growth from 2005 upto the present. Looking at the chart below, India comes across as just another large emerging economy of the 154 countries in the IMF’s grouping below. They all boomed in the middle years of the last decade and they have all substantially slowed down now.

For data sources and clarifications, see Table 1.
This huge drop over the last two years was generally most unexpected. Instead of the BRICS, there is now talk of BIITS (Brazil India, Indonesia Turkey and South Africa). There is a growing consensus that the BRICS party is over. In the last Chapter, we will examine the condition of the BRICS based on the analytical framework developed in this book.

1.5 THE PREDOMINANT EXPLANATION

In India, this downturn has been predominantly attributed to political factors. Due to environmental restrictions, hurdles to land acquisition, often involving the displacement of tribals and other prior inhabitants of the land, the setting up of factories has been stalled – as in the prominent case of Tata’s automobile plant in Singur in West Bengal. Similarly, it is repeatedly stated by business entities that due to the lack of clear title to land and complicated procedures for real estate transactions, construction projects remain mired in the ground. Since the passage of the Right to Information Act in 2005, bureaucrats are reluctant to clear files and sanction projects, less they be hauled up later on for violations of due process. These factors are undoubtedly present. The following multi-panel chart depicting this situation or some variation or extension of it has appeared umpteen times in various articles and publications.

![Rate of Investment Chart](chart.png)

Source: High interest rates don’t stall projects: CMIE, 18th June, 2012, Financial Express

---

2 In Chapter 5, those taking a less optimistic view during the boom years, this author included, are cited and some discussed.
The former chief economic advisor Kaushik Basu, in April 2012, characterized India’s economic and political situation as one of ‘policy paralysis’. The phrase went viral, and the drop in growth is invariable attributed to policy paralysis in policy discussions. Both the phrase and the explanation are quite appealing. Due to a Supreme Court ban on mining in Karnataka and Goa due to environmental reasons, iron ore production in these states has slumped.

However, in explaining overall macro-economic outcomes, the role of policy paralysis can be questioned. Along with the drop in growth, there has been a huge rise in inflation. The significant rise in inflation for India can be seen in the Chart below. (Since Jan 2011, India has a new CPI series that indicates slightly lower inflation from 2012 onwards than seen in the chart below).

![India's CPI Inflation Chart](chart)

**CPI Inflation**
- 2003–08 Avg: 5.0%
- 2008–13 Avg: 10.1%
- Rise: 5.1%

Source: HOSIE, RBI. CPI (IW) stands for Consumer Price Index (Industrial Worker). Inflation is measured on an average basis, i.e., the percent change of the average CPI over the year, not March to March, which is point to point.

What needs to be explained is the combined drop in growth and the accompanying rise in inflation, which can be called stagflation. This stagflation has been going on in India and emerging economies for about two years now. As argued later, the policy paralysis view can, at best, explain the ‘stag’ but not the ‘flation’.
2.6.1 Fluctuations around Potential GDP: A Hypothetical Case

Potential GDP generally does not follow a smooth trend. However, it is conceptually useful to start thinking about business cycles as completely smooth fluctuations around an unchanging trend. Even when the cycles are not completely smooth, as for a sine curve, the economy can be assumed to be at potential on average.

The numbers in the Table below are for a hypothetical cycle which is not perfectly smooth, along with a classification of the business cycle phases. I have classified the periods into business cycle phases based on the actual GDP growth rate relative to trend and its immediate past values.

<table>
<thead>
<tr>
<th>Period</th>
<th>Business Cycle Phase</th>
<th>Growth Trend</th>
<th>Growth Actual</th>
<th>Output Level Trend</th>
<th>Output Level Actual</th>
<th>aftOR*</th>
<th>URate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Trend</td>
<td>3</td>
<td>3</td>
<td>200.0</td>
<td>200.0</td>
<td>100</td>
<td>6.0</td>
</tr>
<tr>
<td>1</td>
<td>Trend</td>
<td>3</td>
<td>3</td>
<td>206.0</td>
<td>206.0</td>
<td>100</td>
<td>6.0</td>
</tr>
<tr>
<td>2</td>
<td>Trend</td>
<td>3</td>
<td>3</td>
<td>212.18</td>
<td>212.18</td>
<td>100</td>
<td>6.0</td>
</tr>
<tr>
<td>3</td>
<td>Boom</td>
<td>3</td>
<td>6</td>
<td>218.55</td>
<td>224.91</td>
<td>102.91</td>
<td>5.42</td>
</tr>
<tr>
<td>4</td>
<td>Boom</td>
<td>3</td>
<td>6</td>
<td>225.10</td>
<td>238.41</td>
<td>105.91</td>
<td>4.82</td>
</tr>
<tr>
<td>5</td>
<td>Boom</td>
<td>3</td>
<td>6</td>
<td>231.85</td>
<td>252.71</td>
<td>108.99</td>
<td>4.20</td>
</tr>
<tr>
<td>6</td>
<td>Slowdown</td>
<td>3</td>
<td>2</td>
<td>238.81</td>
<td>257.76</td>
<td>107.94</td>
<td>4.41</td>
</tr>
<tr>
<td>7</td>
<td>Slowdown</td>
<td>3</td>
<td>2</td>
<td>245.97</td>
<td>262.92</td>
<td>106.89</td>
<td>4.62</td>
</tr>
<tr>
<td>8</td>
<td>Slowdown</td>
<td>3</td>
<td>2</td>
<td>253.35</td>
<td>268.18</td>
<td>105.85</td>
<td>4.83</td>
</tr>
<tr>
<td>9</td>
<td>Slowdown</td>
<td>3</td>
<td>2</td>
<td>260.95</td>
<td>273.54</td>
<td>104.82</td>
<td>5.04</td>
</tr>
<tr>
<td>10</td>
<td>Slowdown</td>
<td>3</td>
<td>2</td>
<td>268.78</td>
<td>279.01</td>
<td>103.81</td>
<td>5.24</td>
</tr>
<tr>
<td>11</td>
<td>Absolute Recession</td>
<td>3</td>
<td>-2</td>
<td>276.85</td>
<td>273.43</td>
<td>98.77</td>
<td>6.25</td>
</tr>
<tr>
<td>12</td>
<td>Absolute Recession</td>
<td>3</td>
<td>-2</td>
<td>285.15</td>
<td>267.96</td>
<td>93.97</td>
<td>7.21</td>
</tr>
<tr>
<td>13</td>
<td>Slow Recovery</td>
<td>3</td>
<td>2</td>
<td>293.71</td>
<td>273.32</td>
<td>93.06</td>
<td>7.39</td>
</tr>
<tr>
<td>14</td>
<td>Slow Recovery</td>
<td>3</td>
<td>2</td>
<td>302.52</td>
<td>278.79</td>
<td>92.16</td>
<td>7.57</td>
</tr>
</tbody>
</table>

(Contd.)
15 Fast Recovery  3  6  311.59  295.52  94.84  7.03
16 Fast Recovery  3  6  320.94  313.25  97.60  6.48
17 Final Adjustment  3  5.53  330.57  330.57  100.0  6.0
18 LRE Trend  3  3  340.49  340.49  100.0  6.0

* Note that ADSGAP = aftOR – 100. For ease of reading, the numbers have been rounded off to 2 decimal.

The first four data columns of the table are fairly self-explanatory: the trend growth rate (3%), the actual growth rate, the trend level of output and the actual level of output. The economy starts at long run equilibrium, with steady growth of 3% at gy = gy*. Let us look at period 3. A boom is underway and growth rises to 6%, well above trend. Trend output y* is 218.55 and the level of actual output y is 224.91. Hence, as can be seen from the table, aftOR is 100*(224.91/218.55) = 102.91 in Period 3

In period 5 and 6, growth continues at 6%, but since this is from a higher base due to rapid growth in Period 3, aftOR raises even more to 109.0. When ADSGAP (=aftOR – 100) is taken to be the measure of overheating, the economy is overheated by 9% in Period 5, much more than indicated by growth rate of 6% in that Period.

Then, the slowdown starts in Period 6; growth drops to 2%, below trend for several periods in a row. However, since output had risen so much above trend, aftOR remains above 100, although growth is below trend for five periods. In Period 10, despite prolonged slow growth, the economy is still overheated. Then, an absolute recession (negative growth) occurs in Period 11. By coincidence, aftOR also drops below 100 in the same Period. The absolute recession need not coincide with aftOR falling below 100. Suppose in Period 8, growth was not 2% but instead fell to −1%, an absolute recession. However, aftOR would have been 102.7 in this case, still a high value.

2.6.2 Classifying Business Cycle Phases Theoretically

The hypothetical business cycle in Table 1 and the accompanying Charts have been classified into the following phases (please note that these do not correspond to any official classification):
One clarification is required. While the original Phillips curve was the link between money wage inflation and unemployment, the normal Phillips curve, drawn as above for USA, is a link between price inflation and unemployment. The difference between wage inflation and price inflation is due to (mainly manufacturing) productivity growth that results from technical progress. Basically productivity is output per person hour.

Usually averaging across business cycles phases when productivity varies, price inflation will be lower than wage inflation since productivity growth lowers unit labour costs and hence it lowers prices relative to wages. In the manufacturing based UK economy which Phillips analyzed, price inflation was on average lower than wage inflation by 2-3%. From now on, for practical purposes, we ignore this difference and refer to the Phillips curve as the (price) inflation/unemployment linkage, unless specifically referring to the wage Phillips curve.

3.3.1 The Phillips Curve as a Policy Choice

In the 1960s, based on the observed, stable Phillips curve link between unemployment and inflation, the noted Keynesian economists Samuelson and Solow advocated a policy of trading off a rise in inflation for a fall in unemployment. Their logic was as follows: a fall in unemployment leads to a large rise in social welfare, while the welfare loss from the ensuing rise in inflation is small. (Many people would agree that unemployment has high costs while inflation is a minor nuisance at best at low inflation rates\(^3\). Hence, within reasonable limits, based on preferences of the public, policy makers should tolerate some more inflation to reduce unemployment.

Algebraically, this can be expressed by a Macroeconomic Welfare Function (MEW):

\[
\text{MEW} = 100 - \alpha \times \text{UNEMP RATE} - \beta \times \text{INFLATION},
\]

with \(\alpha\) much >\(\beta\), reflecting the much higher cost of unemployment. Suppose the Phillips curve is linear with slope two (a 1% drop in URATE increases INFLATION by 2%) and \(\alpha = 10\), \(\beta = 1\). Then if policy makers decide to increase demand to reduce unemployment, MEW goes up. The net gain is shown in the Table below.

\(^3\) The costs of inflation are discussed in Section 5.9
Macroeconomic Welfare (MEW) goes up by 8 units for a policy of accepting 2 percentage points rise in inflation to obtain a 1 percentage fall in unemployment.

Accordingly, in the mid 1960s, the President’s Council of Economic Advisors under the MIT Keynesian economists Samuelson and Solow advocated boosting demand and growth. This was the period of the Great Society Programs (starting in 1964) under Democratic President Johnson. With Vietnam War expenditures boosting aggregate demand, the expansion had gone on from February 1961 onwards. As of February 1968, the expansion had gone on for seven years, the longest on record. Analysts were proclaiming that the business cycle was dead. The year was ‘68, the summer of love and Haight! Anything seemed possible. (Indeed, the US Phillips curve chart upto 1968, shown on the previous page, taken from U.S. Economic Report of the President, 1969, was used to justify the trade-off policy).

### 3.4 The Friedman-Phelps Expectations Augmented Phillips Curve

Friedman’s analysis and policy recommendations evolved as a rejoinder in real time to the Keynesians. He argued, first intuitively in April 1966, and then more formally in his Presidential Address to the American Economic Association in December 1967, that inflation

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4 The reference is to the Haight Ashbury commune in San Francisco where the hippie movement originated.

5 In this chart, the inflation measure is the implicit GNP deflator, not the CPI, which would be conceptually more accurate. To capture policy making in real time, I found and downloaded the original chart.

6 Independently, the noted economist Phelps came to the same conclusion, based on a multiperiod model of inflation and unemployment. “Money Wage Dynamics and Labour Market Equilibrium” (1968)

7 Published in American Economic Review (1968)