Understanding Global Recessions and Global Recoveries

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The views expressed in this presentation are those of the authors and do not necessarily represent those of the IMF or IMF policy.
Motivation

• Global recession…a popular concept since 2008
• Policy makers, bankers, and journalists often talk about it
• Everybody has a (different) definition in mind

• But, no clear definition…
What is a Global Recession?

• **Wikipedia:** A *global recession* is a period of *global economic slowdown*. The IMF takes many factors into account when defining a global recession, but it states that global economic growth of 3 percent or less is "equivalent to a global recession“. By this measure, four periods since 1985 qualify: 1990–1993, 1998, 2001–2002 and 2008–2009.

• **Investopedia:** An extended period of *international economic downturn*. Generally, the IMF considers a global recession as a period where gross domestic product (GDP) growth is at 3% or less. In addition to that, the IMF looks at declines in real per-capita world GDP along with several global macroeconomic factors before confirming a global recession.

• **Business Dictionary:** A period of *general economic decline* that has reached global proportions. “The financial crisis in the United States in 2008 sparked a global recession that lasted into 2009.”
No Definition of Global Recession!

• “Many economists are now predicting the worst global recession since the 1930s. Such grim warnings discourage spending by households and businesses, depressing output even more. It is unfortunate, therefore, that there is so much confusion about what pundits mean when they talk about a “global recession”. …. The trouble is that there is no agreed definition of a global recession. The Economist, November 6, 2008

• “Leading economic and business leaders are talking about "a global recession". But it is not easy to define. … Even for national economies, the word "recession" has more than one meaning…. I have heard several different thresholds …for judging whether a year counts as a recession. Global output growth below 3%, 2.5%, and 2% have all been suggested”. Andrew Walker, BBC News, October 2, 2009.
Why Difficult? Why Important?

1. Why is it difficult to define global recessions? No easy mapping between national recessions and global recessions (lack of data); A national recession is a contraction in GDP but the world GDP hardly declines.

2. Why is it important study global recessions?
Surveillance; Policy responses at the national level; Idiosyncratic vs. Global shocks, Need for policy coordination

This study provides a comprehensive analysis of global recessions and recoveries...
Three Questions

1. What is a global recession? What is a global recovery? What are the main features of these episodes?

2. How different are the latest global recession and ongoing recovery?

3. How are national cycles related to global cycles?
1. What is a global recession? What is a global recovery? What are the main features of these episodes?

A global recession corresponds to a contraction in the world per-capita GDP accompanied by a broad synchronized decline in various other measures of global economic activity. Four episodes since 1960: 1975, 1982, 1991, and 2009...

A global recovery corresponds to a rebound in worldwide activity in one to three years following a global recession.
2. How different are the latest global recession and ongoing recovery?

The latest global recession has been the most severe synchronized episode of the past 50 years.

The latest global recovery has been comparable to the earlier ones. But this masks two important divergences.

• A divergence of activity. This recovery has been the weakest for the ACs and the strongest for EMEs.
• A divergence of policies, mainly in the ACs. While policies were aligned in the past, fiscal and monetary policies have marched in opposite directions this time.
3. How are national cycles related to global cycles?

National cycles are tightly linked to the global cycle. They are more sensitive to the global cycle during global recessions than during global expansions. The degree of sensitivity to the global cycle differs across countries.
Outline

• Database and Methodology

• What is a global recession? What is a global recovery? What are the main features of these episodes?

• How different are the latest global recession and ongoing recovery?

• How are national cycles related to global cycles?

• Conclusion
Database

- 180 countries; 1960-2011 (up to 2014 with forecasts)

- Macroeconomic variables: GDP, consumption, investment, industrial production, trade, unemployment, inflation, interest rates, government expenditures, etc.

- Financial variables: Credit, equity prices, house prices, and capital flows.

- Data Sources: WEO, WDI, PWT, IFS, OECD, etc.
Methodology: National Cycles

- Two complimentary approaches: Statistical and judgmental methods

- **Statistical method**: Identification of peaks and troughs in output (only one indicator). Bry and Boschan (1971); Harding and Pagan (2002); Claessens, Kose, and Terrones (2012)

- **Judgmental method**: NBER and CEPR. Broad set of indicators (GDP, retail sales, industrial production, employment, disposable income, and initial claims for unemployment insurance) to reach judgment on whether there is recession. Burns and Mitchell (1946).
Methodology: Global Cycles

• Consider methods that closely follow those used at the national level

• Statistical method: Identification of peaks and troughs in world output per-capita (in PPP weights and market weights). World output per-capita takes into account heterogeneity in both population growth rates and trend growth. A minimum two-year duration of a global cycle and a minimum one-year duration of each of the cyclical phases

• Judgmental method: Broad set of world activity indicators (output per-capita, IP, unemployment, oil consumption, trade and capital flows) to reach a judgment on recession.
Outline

• Database and Methodology

• What is a global recession? What is a global recovery? What are the main features of these episodes?
What is a global recession?

• A global recession is defined as a decline in world real GDP per capita accompanied by a broad synchronized decline in various other measures of global economic activity.


• The 2009 recession is the most severe and synchronized episode.

• The average decline in world per-capita output is 0.75 percent during these episodes; about 3 percentage points lower than the average.
Statistical Method

• Identification of peaks and troughs in world output per-capita.
Growth of Per Capita World GDP (in percent)

Real per Capita World GDP Growth

PPP Weights

Market Weights

Judgmental Method

• Broad set of world activity indicators (output per-capita, IP, unemployment, oil consumption, trade and capital flows) to reach a judgment on whether a preponderance of the evidence points to a recession.
Output During Global Recessions
*(growth, per capita, in percent)*

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>-2.1</td>
</tr>
<tr>
<td>1982</td>
<td>-1.4</td>
</tr>
<tr>
<td>1991</td>
<td>-0.7</td>
</tr>
<tr>
<td>2009</td>
<td>1.83</td>
</tr>
<tr>
<td>Other Years</td>
<td>0.16</td>
</tr>
</tbody>
</table>
Consumption and Investment

(growth, per capita, in percent)

Consumption

Investment

1975 1982 1991 2009 Other Years

1975 1982 1991 2009 Other Years
Industrial Production and Oil Consumption
(growth, in percent)

Industrial Production

Oil Consumption
Unemployment Rate
(change, percentage points)

Unemployment

1975 1982 1991 2009 Other Years

Unemployment
International Trade and Capital Flows
(change, trade in percent, capital flows/GDP)
What Happens During Global Recessions?

(in percent)

- Output
- Industrial Production
- Unemployment
- Oil Consumption
- Total Trade
- Capital Flows over GDP

1975 1982 1991 2009 Other Years
Synchronization of Recessions

• How synchronized are national recessions around episodes of global recessions? Not surprisingly, the fraction of countries in recession went up sharply during the four global recessions.

• In all global recession episodes, the fraction of countries in recession started picking up ahead of the recession year.

• During the two global downturns (1998 and 2001), the fraction of countries in recession was relatively low.

• In the last three episodes, financial disruptions play an important role.
Fraction of Countries in Recessions

*(PPP weighted percent of countries)*

- **Advanced economies**
- **Emerging Markets**
- **Other Developing**


Graph showing the fraction of countries in recessions from 1961 to 2009, categorized by advanced economies, emerging markets, and other developing countries.
What is a global recovery?

- **National Cycles:** The recovery is the early part of the expansion phase. It is associated with the first year following the trough of the global business cycle. Also examine the recovery in the first three years following a global recession.

- **Global Cycles:** A recovery corresponds to a rebound in worldwide activity in the first year (three years) following the recession.

- Driven by a pickup in c, i, and international trade. Unemployment remains high and persistent.
Output Growth During Global Recoveries

(one year after the recession, growth, in percent)
Output Growth During Global Recoveries

(three years after the recession, average growth, in percent)

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976-78</td>
<td>3.0</td>
</tr>
<tr>
<td>1983-85</td>
<td>2.0</td>
</tr>
<tr>
<td>1992-94</td>
<td>0.5</td>
</tr>
<tr>
<td>2010-12</td>
<td>3.0</td>
</tr>
<tr>
<td>Other Years</td>
<td>2.0</td>
</tr>
</tbody>
</table>
What Happens During Global Recoveries?

(three years after the global recession, average growth, in percent)

- Output
- Industrial Production
- Unemployment
- Oil Consumption
- Trade Flows
- Capital Flows over GDP

1976-78
1983-85
1992-94
2010-12
Other Years
Financial Sector During Global Recoveries
(three years after the global recession, average, growth, in percent)
A global recession corresponds to a contraction in the world per-capita GDP accompanied by a broad synchronized decline in various other measures of global economic activity. Four episodes since 1960: 1975, 1982, 1991, and 2009...

A global recovery corresponds to a rebound in worldwide activity in one to three years following a global recession.
Outline

• Database and Methodology

• What is a global recession? What is a global recovery? What are the main features of these episodes?

• How different are the latest global recession and ongoing recovery?
Ongoing global recovery does not seem unusual
(index, year of the recession=100)
Strong divergence of activity across countries
(index, year of the recession=100)

Advanced Countries

Emerging Markets

Weakest recovery

Strongest recovery

Average of Global Recessions

Average of Global Recessions
Consumption During Recoveries
(per capita, cumulative, percent change)

Advanced Countries

Emerging Markets

Year of the recession  1 year after  2 years after  3 years after
Investment During Recoveries
(per capita, cumulative, percent change)

Advanced Countries

Emerging Markets

Year of the recession 1 year after

2 years after 3 years after
Why is this recovery in the ACs different?

• Recoveries from recessions associated with financial crises are sluggish (i.e. Reinhart and Rogoff, 2009).

• Recoveries with high uncertainty are weaker. Increased policy uncertainty in the ACs has contributed to slow recovery (i.e. Baker et al 2012)

• Current macroeconomic policies are different to past ones
**Divergent Policies**

**Fiscal policy**

*(Primary expenditure indices = 100 in the year before the global recession)*

- **Advanced Countries**
  - 2009 (Dashed Line = Projection)
  - Average of Previous Global Recessions (1975, 1982, 1991)

- **Emerging Markets**
  - 2009 (Dashed Line = Projection)
  - Average of Previous Global Recessions (1975, 1982, 1991)
Pattern holds across major ACs

(Primary expenditure indices = 100 in the year before the global recession)
Accommodative monetary policies.

*(Short Term Interest Rate, %)*

**Advanced Countries**

- Red line: 2009 (Dashed Line = Projection)
- Blue line: Average of Previous Global Recessions (1975, 1982, 1991)

**Emerging Markets**

- Red line: 2009 (Dashed Line = Projection)
- Blue line: Average of Previous Global Recessions (1975, 1982, 1991)
Unconventional monetary measures in the ACs

(Percent of RGDP in the year before the global recession)

USA

Euro Area

UK

Year of Global Recession

Year of Global Recession

2009 (Dashed Line = Projection)

Average of Previous Global Recessions (1975, 1982, 1991)
What could explain divergence of policies?

High public debt in the ACs

(Public Debt to Real GDP ratios)

Emerging Economies

Advanced Countries

2009 (Dashed Line = Projection)

Average of Previous Global Recessions (1975, 1982, 1991)
And low inflation rates across the world

(Inflation rates)

Advanced Countries

Emerging Markets

2009 (Dashed Line = Projection)
Average of Previous Global Recessions (1975, 1982, 1991)
2. How different are the latest global recession and ongoing recovery?

The latest global recession has been the most severe and synchronized episode of the past 50 years.

The latest global recovery has been comparable to the earlier ones. But this masks two important divergences.

- A divergence of activity. This recovery has been the weakest for the ACs and the strongest for EMEs.
- A divergence of policies, mainly in the ACs. While policies were aligned in the past, fiscal and monetary policies have marched in opposite directions this time.
Outline

• Database and Methodology

• What is a global recession? What is a global recovery? What are the main features of these episodes?

• How different are the latest global recession and ongoing recovery?

• How are national cycles related to global cycles?
Linkages Between National and Global Cycles

- To examine the sensitivity of the national to the global cycle during different phases of the global cycle. A parsimonious framework (autoregressive distributed lag model, dynamic panel regressions with fixed effects).

- The baseline model describes how growth in a country is linked to global growth, its own growth history, and global financial conditions.

- Extend the model by interacting global growth with a global recession dummy and with trade and financial linkages.

- Database: 103 countries (21 AC, 28 EM, 54 ODE; exclude small states, poor data coverage; 1970-2011)
How important is the global cycle for national cycles?

• Positive and statistically significant association between national output growth and the rest of the world growth. National cycles often move in tandem with the global cycle.

• This relationship varies over the two phases of the global cycle. National cycles tend to be much more sensitive to the global cycle during recessions than they are during expansions.

• A negative association between the national cycles and the world real interest rate. This relationship differs across the two phases of the cycle. During global expansions, it is negative and statistically significant whereas, during global recessions, it is slightly positive but insignificant.
### Linkages Between National and Global Cycles

<table>
<thead>
<tr>
<th></th>
<th>Global Recession</th>
<th>Global Expansion</th>
<th>Full Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(3)</td>
<td>(6)</td>
<td>(11)</td>
</tr>
<tr>
<td>Output Growth (Lagged)</td>
<td>0.463***</td>
<td>0.277***</td>
<td>0.285***</td>
</tr>
<tr>
<td>Rest of the World Output Growth</td>
<td>1.469***</td>
<td>0.710***</td>
<td>0.706***</td>
</tr>
<tr>
<td>Rest of the World Output Growth x Global Recession Dummy</td>
<td></td>
<td>0.519**</td>
<td></td>
</tr>
<tr>
<td>Real Libor Rate</td>
<td>0.095</td>
<td>-0.121***</td>
<td>-0.122***</td>
</tr>
<tr>
<td>Real Libor Rate x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Recession Dummy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>406</td>
<td>4455</td>
<td>4861</td>
</tr>
<tr>
<td>Number of countries</td>
<td>103</td>
<td>103</td>
<td>103</td>
</tr>
<tr>
<td>R2 Adjusted</td>
<td>0.167</td>
<td>0.132</td>
<td>0.16</td>
</tr>
</tbody>
</table>

**Notes**: The dependent variable is the growth rate of per capita real GDP in each country. ***,**,* denote significance at 1 percent, 5 percent, and 10 percent levels, respectively. All regressions include fixed effects.
Do country-specific features affect the sensitivity of national cycles to global cycles?

• Both the advanced and emerging market economies appear to be more sensitive to the global business cycle during global recessions than are the other developing countries.

• In the case of advanced countries, the national cycles tend to move with the global interest rate cycle (a statistically significant positive association between the domestic growth and the world real interest rate). However, in the case of emerging markets and other developing countries, the national cycles tend to move in the opposite direction of the world interest rate cycle during global expansions.

• Interest rate shocks have differential effects on the business cycle of debtor and creditor countries. While there has been a role reversal in recent years, advanced countries were often creditors and emerging markets and other developing countries were debtors during most of the time period we study here.
## National and Global Cycles: Country Groups

<table>
<thead>
<tr>
<th></th>
<th>Advanced Countries (5)</th>
<th>Emerging Markets (10)</th>
<th>Developing Countries (15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Growth (Lagged)</td>
<td>0.260***</td>
<td>0.279***</td>
<td>0.287***</td>
</tr>
<tr>
<td>Rest of the World Output Growth</td>
<td>0.680***</td>
<td>0.670***</td>
<td>0.684***</td>
</tr>
<tr>
<td>Rest of the World Output Growth x Global Recession Dummy</td>
<td>1.333***</td>
<td>0.768*</td>
<td>0.233</td>
</tr>
<tr>
<td>Real Libor Rate</td>
<td>0.235***</td>
<td>-0.183***</td>
<td>-0.228***</td>
</tr>
<tr>
<td>Real Libor Rate x Global Recession Dummy</td>
<td>0.103</td>
<td>0.169</td>
<td>0.190**</td>
</tr>
<tr>
<td>N of observations</td>
<td>1050</td>
<td>1341</td>
<td>2480</td>
</tr>
<tr>
<td>Number of countries</td>
<td>21</td>
<td>28</td>
<td>54</td>
</tr>
<tr>
<td>R2 Adjusted</td>
<td>0.344</td>
<td>0.151</td>
<td>0.144</td>
</tr>
</tbody>
</table>

Notes: The dependent variable is the growth rate of per capita real GDP. ***, **, * denote significance at 1 percent, 5 percent, and 10 percent levels, respectively. All regressions include fixed effects.
Do country-specific features affect the sensitivity of national cycles to global cycles?

• Both trade and financial integration appear to influence the sensitivity of national cycles to the global cycle and the world interest rate. The national cycle is more sensitive to the global business cycle in countries that are more open to trade flows.

• The statistically significant negative association between the national cycle and the global interest rate cycle during global expansions remains intact when we introduce additional integration variables, but this association becomes weaker in countries with stronger international financial linkages.

• Countries with stronger financial linkages tend to attract a diverse set of capital flows, including FDI and portfolio investment, whereas those weaker linkages often rely on debt flows that are sensitive to movements in world interest rates.
## National and global cycles: Does integration matter?

<table>
<thead>
<tr>
<th></th>
<th>(2)</th>
<th>(3)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Growth (Lagged)</td>
<td>0.259***</td>
<td>0.261***</td>
<td>0.260***</td>
<td>0.260***</td>
</tr>
<tr>
<td>Rest of the World Output Growth</td>
<td>0.543***</td>
<td>0.502***</td>
<td>0.646***</td>
<td>0.494***</td>
</tr>
<tr>
<td>Real Libor Rate</td>
<td>-0.120***</td>
<td>-0.140***</td>
<td>-0.183***</td>
<td>-0.183***</td>
</tr>
<tr>
<td>Rest of the World Output Growth x Trade Openness</td>
<td></td>
<td>0.273***</td>
<td>0.207***</td>
<td>0.212***</td>
</tr>
<tr>
<td>Rest of the World Output Growth x Global Recession Dummy</td>
<td></td>
<td></td>
<td>0.969***</td>
<td>1.166***</td>
</tr>
<tr>
<td>Real Libor Rate x Global Recession Dummy</td>
<td></td>
<td></td>
<td>0.170**</td>
<td>0.201***</td>
</tr>
<tr>
<td>Real Libor Rate x Financial Openness</td>
<td></td>
<td></td>
<td></td>
<td>0.0291**</td>
</tr>
</tbody>
</table>

| N of observations  | 3666   | 3666   | 3666   | 3666   |
| Number of countries| 103    | 103    | 103    | 103    |
| R2 Adjusted        | 0.618  | 0.584  | 0.561  | 0.569  |

**Notes**: The dependent variable is the growth rate of per capita real GDP in each country. ***,**,,* denote significance at 1 percent, 5 percent, and 10 percent levels, respectively. All regressions include fixed effects.
3. How are national cycles related to global cycles?

National cycles are tightly linked to the global cycle. They are more sensitive to the global cycle during global recessions than during global expansions. The degree of sensitivity to the global cycle differs across countries: AC and EMEs are more sensitive to global developments than developing countries. Countries are more sensitive to global cycle, the more integrated they are.
Outline

• Database and Methodology

• What is a global recession? What is a global recovery? What are the main features of these episodes?

• How different are the latest global recession and ongoing recovery?

• How are national cycles related to global cycles?

• Conclusion
Conclusions

• The world economy experienced 4 global recessions/recoveries since 1960.

• Global recessions feature synchronized declines in worldwide activity. Global recoveries are accompanied by a rebound in activity, driven by a pickup in consumption, investment, and trade.

• The 2009 recession was a unique episode. The recovery from this recession, however, has been comparable to previous episodes. Yet this recovery has featured divergence of activity—weakest recovery for the ACs and strongest for the EMEs—and policies—fiscal policy was contractionary and monetary policy was accommodative in the ACs.

• National cycles are tightly linked to the global cycles. The sensitivity of national cycles is more pronounced during global recessions. More integrated economies tend to be more sensitive to the global cycle.
Questions & Comments

Thank You!
Future Research

• Comparisons between global recessions and downturns: why do some become recessions? And why do some others become downturns?

• How and why are certain countries more sensitive to the global cycle (commodity vs. manufacturing goods exporters; debtor vs. creditor countries)?

• Through which channels are the regional cycles influenced by the global cycle (especially during global recessions)?
What happened during global recessions?

• **1975**: the first oil price shock, fourfold increase, the beginning of a prolonged period of stagflation, with low output growth and high inflation in the United States. All of the G-7 countries except Germany experienced high inflation rates.

• **1982**: the rapid increase in oil prices; tight monetary policies in several advanced economies; and the Latin American debt crisis.

• **1991**: difficulties in the U.S. credit markets; banking and currency crises in Europe (Norway, Finland, Sweden in 91; ERM crisis in 92) and challenges faced by the east European transition economies; burst of the asset price bubble in Japan; and the uncertainty stemming from the Gulf War and the subsequent increase in the price of oil.

• **2009**: global financial crisis
Growth of World GDP
(in percent)

Real World GDP Growth
Market Weights
PPP Weights

3 percent rule
Credit During Global Recoveries

(index, year of the recession=100)

Advanced Countries

Emerging Markets


Average of Global Recessions

Advanced Countries

Emerging Markets


Average of Global Recessions


Average of Global Recessions


Average of Global Recessions