

RESEARCH

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Research Summaries Inflation and Disinflation

Oya Celasun



The past decade has seen a substantial decline in inflation rates around the world. In particular, the developing economies have managed to significantly reduce inflation, in many cases from chronically high levels. This article summarizes recent IMF research on country experiences with inflation and disinflation, the determinants of the success of disinflation policies, the long-term causes of

inflation, and new approaches to inflation modeling.

Since the start of the 21st century, the global economy has experienced inflation rates far below those during the previous five decades. Rogoff (2003) looks at this remarkable decline in global inflation and discusses a variety of different factors that might have contributed to it. These include significant improvements in central bank institutions and practices, as well as a growing public consensus that expansionary fiscal policies financed by money creation do not help address deeprooted structural problems, but rather lead to high inflation. *(continued on page 2)*

Policy Responses to Volatile Crude Oil Prices and Fiscal Dependency

Sam Ouliaris



Nominal crude oil prices stood at record highs in October 2004. While oil dependency has declined in the industrialized world since the 1970s, many developing countries remain vulnerable to large and unpredictable swings in oil prices. Given the fundamental importance of crude oil either as a source of energy or export revenues, the IMF has conducted extensive research on the relationship be-

tween oil prices and economic activity, and on how national governments can manage oil price volatility. This survey provides a selective review of that research.

The relationship between oil prices and growth over the business cycle has been the subject of considerable study in recent years. Robinson and others (2000) examine the impact of exogenous oil price shocks on industrial and developing economies, and recommend as the ideal policy response to allow the initial price shock to feed through to domestic prices, but to not let monetary policy accommodate any second-round effect. Hunt, Isard, and Laxton (2001) analyze the macroeconomic effects of higher oil price shocks using MULTIMOD, and distinguish between temporary, more persistent, and permanent oil price shocks. *(continued on page 4)*

Inflation and Disinflation (continued from page 1)

Rogoff also argues that two byproducts of increased global competition—greater flexibility of prices and smaller markups of prices over costs—have reduced the potential gains from unanticipated inflation, and thus policymakers' incentives to create such inflationary scenarios.

A longstanding premise is that large fiscal deficits lie at the root of chronically high inflation rates in developing countries. This view would suggest that the recent disinflation may have been partly driven by tighter fiscal policies. Catao and Terrones (2003) use a broad panel dataset to test this frequently claimed yet rarely proven relationship. They find a strong, nonlinear relationship between fiscal deficits and inflation in developing and high-inflation economies, but not among low-inflation advanced economies, thereby echoing earlier findings by Fischer, Sahay, and Végh (2002). In a study of 11 major disinflation episodes over the past decade, Celasun, Gelos, and Prati (2004) show that improvements in primary fiscal balances have played a major role in curbing inflationary expectations. In particular, strengthened primary balances seem to have sent strong signals about the commitment of governments to public debt sustainability, despite the fact that in some countries the stocks of public debt were increasing on account of large banking sector bailouts.

In a number of developing economies, the strength of commodity prices might have contributed to improvements in fiscal balances and declines in inflation. In many oilexporting countries, for example, inflation rates have fallen despite continued rapid growth in monetary aggregates. Celasun and Goswami (2002) and Ohnsorge and Oomes (forthcoming) present evidence from Iran and Russia—two oil exporters—that appreciating exchange rates have reduced the demand for foreign currency denominated assets and increased the demand for domestic money, contributing to a reduction in inflation.

Increased mobility of capital across countries and increased levels of dollarization might also have had disciplining effects on fiscal and monetary policies in many developing countries. Dollarization reduces the effectiveness of inflation in deflating the real value of public debt. However, as argued by Reinhart, Rogoff, and Savastano (2003), dollarization does not necessarily create obstacles to monetary control. Some empirical evidence in a model of the inflation-output tradeoff in Loungani, Razin, and Yuen (2000) suggests that disinflation is likely to entail larger output losses in countries with more open capital accounts. This suggests that the higher expected costs of disinflation in the context of higher capital mobility could temper policymakers' incentives to create an inflationary scenario in the first place.

With respect to the link between central bank independence and inflation, a study of Latin American and Caribbean countries by Jácome and Vázquez (forthcoming) finds a strong negative association between central bank independence and inflation. The result holds for three alternative measures of central bank independence, and after controlling for international inflation, banking crises, and exchange regimes. The result is also robust to the inclusion of a broader set of structural reforms that usually accompanies changes in central bank legislation, illustrating the complementarity between different reforms in achieving control over inflation.

A number of studies have tried to uncover the relationship between political institutions and inflation performance. Satyanath and Subramanian (2004) examine the determinants of nominal stability in the long run-including price and exchange rate stability-and find that the strength of democratic institutions, along with measures of conflict and openness, are the most significant determinants of long-run nominal stability. By contrast, a study by Hamann and Prati (2002) of the determinants of the short-run success of disinflation policies finds that weak executive authority, unfavorable external conditions, and a long history of inflation are associated with a higher chance of disinflation failure. This evidence suggests that the lack of strong democratic institutions tends to sow the seeds of inflation initially, but stronger democratic institutions may make it more difficult to eradicate inflation once it becomes entrenched.

Alongside the worldwide decline in inflation in recent years have come important advancements in modeling inflation dynamics using microfounded models. IMF research in this area has focused on the persistence of inflation, observed even in the absence of serially-correlated driving forces, such as during implementation of disinflation policies. Calvo, Celasun, and Kumhof (2002) propose a microfounded model of pricing that can generate inflation inertia without relying on backward-looking behavior by allowing price setters to establish pricing policies-rather than price levels-at infrequent intervals. The model can explain output costs associated with disinflation policies in an open economy. Cespedes, Kumhof, and Parrado (2003) study the macroeconomic implications of the same pricing mechanism in the case of a closed economy.

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Sovereign Debt Structure for Crisis Prevention

By Eduardo Borensztein, Marcos Chamon, Olivier Jeanne, Paolo Mauro, and Jeromin Zettelmeyer

This Occasional Paper fosters the debate on potential innovations by asking how government debt could be structured to reduce the likelihood of crises, attain greater international risk-sharing, and facilitate the adjustment of fiscal variables to changes in domestic economic conditions. The paper considers recently developed analytical approaches to improving the structure of sovereign debt using existing debt instruments. It then discusses the pros and cons as well as practical challenges of a number of potential innovations, with a focus on proposals to introduce explicit seniority and GDP-linked instruments in the sovereign context.

Three key messages emerge from the analysis. First, the credibility of fiscal and monetary policies is a central prerequisite to buttress the willingness of investors to hold long-term local currency bonds. Credibility in turn depends on both the quality of institutions and a reputation for sound policymaking. Building such a reputation can take many years, but the combination of macroeconomic stabilization with institutional and structural reforms can accelerate this process.

Second, finding ways to protect private creditors from debt dilution in the sovereign context could reduce the cost of borrowing and increase market access for low-debt countries, as well as help prevent overborrowing and risky debt structures. Debt dilution occurs when new debt reduces the claim that existing creditors can hope to recover in the event of a default. Dilution has long been recognized as a problem in the corporate context, where it is addressed through debt covenants and explicit seniority. The study argues for further investigation of analogous innovations in the sovereign context.

The third message is that instruments with equity-like features, which provide for lower payments in the event of adverse shocks and weak economic performance, could help sovereigns improve debt sustainability and international risk-sharing. In particular, GDP-indexed bonds would provide substantial insurance benefits to both advanced countries and emerging markets, though they present substantial implementation challenges.

This study was issued as IMF Occasional Paper No. 237.

Policy Discussion Papers

Policy Discussion Paper No. 04/4 Pension Reform, Investment Restrictions and Capital Markets *Jorge Roldos*

Policy Discussion Paper No. 04/5 Banking Reform in the Lower Mekong Countries *Olaf Unteroberdoerster*

Policy Discussion Paper No. 05/1 Putting the Cart Before the Horse? Capital Account Liberalization and Exchange Rate Flexibility in China Eswar Prasad, Thomas Rumbaugh, and Qing Wang

Policy Discussion Paper No. 05/2 Reforming the Stability and Growth Pact *Anthony Annett, Jörg Decressin, and Michael Deppler*

Policy Responses to Volatile Crude Oil Prices and Fiscal Dependency *(continued from page 1)*

They conclude that (i) oil price increases have a positive effect on core inflation; (ii) delays in responding to a persistent oil price increase may have substantial macroeconomic costs, especially if monetary policy credibility is at stake; and (iii) monetary policy should err on the aggressive side, as restoring monetary credibility may involve a permanent output loss.

In line with academic findings that oil wealth negatively affects institutional quality, Sala-i-Martin and Subramanian (2003) argue that natural resources such as oil, by encouraging rent seeking and corruption, have significant negative effects on the quality of domestic institutions and long-run economic growth. They find confirmatory evidence in the case of Nigeria, and recommend distributing oil revenues directly to the Nigerian population as a potential solution. Hakura (2004) reports further evidence, based on other oil-exporting countries in the Middle East and North Africa (MENA) region, that supports Sala-i-Martin and Subramanian. Abstracting from the problems caused by poor institutions, Spatafora and Warner (1999) look at 18 oil-exporting developing countries and show that if either large shares of capital goods are importable or if labor supply is sufficiently elastic, then natural resource booms can increase investment and

"Several studies that consider the sustainability of fiscal policy in an `oil-dependent' economy recommend focusing on the `core deficit' as a more appropriate indicator of fiscal stance, especially for countries with an oil sector in decline."

non-resource based output, thereby offsetting the negative "Dutch disease" effects arising from a real appreciation of the exchange rate. For countries with limited capital stocks, Takizawa, Gardner, and Ueda (2004) also argue that long-term growth can be enhanced by oil booms if there are positive external effects of public spending on both consumption and productivity shocks.

The unpredictability and volatility of oil prices complicates the conduct of fiscal policy in many oil-exporting countries, and makes the determination of appropriate expenditure levels particularly difficult. In addition, since oil wealth is exhaustible, intergenerational equity considerations also need to be addressed. Allowing for uncertainty and asymmetric adjustment costs, Engel and Valdés (2000) provide operational guidelines for fiscal policy in oil-exporting countries and advocate the establishment of a stabilization fund to decouple government spending from oil price (revenue) volatility. Fasano (2000) finds that the experiences of various countries with stabilization funds have been mixed. Given the nonstationary behavior of crude oil prices-see Cashin, McDermott, and Scott (2002) and Cashin, Liang, and McDermott (2000)-stabilization funds can easily be overwhelmed by significant downward swings in crude oil prices. Recognizing this risk, Daniel (2001) argues that governments should hedge themselves against declines in oil prices by operating directly in crude oil futures markets. While hedging strategies can substantially reduce oil price volatility without significantly reducing return, he notes that governments tend to shy away from these markets. Such behavior can be explained by concerns over the possible political

costs of hedging (i.e., failure to benefit from price rises), lack of institutional capacity, and limited market depth. Recognizing that most pricing rules to determine oil-related subsidies—which typically involve smoothing actual crude oil prices—leave the governments' fiscal stance overexposed to oil price risk, Federico, Daniel, and Bingham (2001) also recommend that governments adopt a hedging strategy based on crude oil futures contracts.

A number of studies examine more specific oil revenue issues relating to the appropriate fiscal regime for the oil sector. In cases in which the federal government does not directly control oil resources, the allocation of oil revenues between the state and local governments raises a number of difficult issues. Ahmad and Mottu (2002), on the basis of an extensive review, conclude that centralization of oil revenues is the preferred arrangement. In contrast, the least-preferred solution is oil revenue sharing, as this takes large amounts of revenue away from the central government, complicating macroeconomic management. Revenue sharing exposes state and local governments to the full dynamics of oil price volatility, encouraging procyclical expenditure and local accumulation of debt when oil prices fall. Drawing lessons from Nigeria's experience with revenue-sharing arrangements, Ahmad and Singh (2003) recommend the use of more stable revenue bases for regional administration as a means of maintaining the provision of public services and sufficient economic incentives to remain in a federation.

Finally, several studies that consider the sustainability of fiscal policy in an "oil-dependent" economy recommend focusing on the "core deficit" (the overall deficit less net transfers and oil and investment income) as a more appropriate indicator of fiscal stance, especially for countries with an oil sector in decline. (See Chalk, 1998, for Venezuela and Kuwait; Baunsgaard, 2003, for Nigeria; and Ntamatungiro, 2004, for Gabon.) Barnett and Ossowki (2002) provide a comprehensive review of the operational aspects of fiscal policy in oil-exporting countries, recommending that these countries operate on the assumption that oil revenue is a nonpermanent component of the budget.

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Area Study

West African Economic and Monetary Union (WAEMU) Countries

Abdoul Aziz Wane



In 1999, the WAEMU countries—Benin, Burkina Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal, and Togo—adopted a regional "Convergence, Stability, Growth, and Solidarity Pact." The pact provides a framework for fiscal convergence similar to the

European Union's Maastricht Treaty, and stresses the need to reinforce convergence through further progress with structural reforms and the harmonization of sectoral policies. The aim is to strengthen economic stability and growth through regional integration. This article reviews recent IMF research on the WAEMU and its main challenges, including the need to expand markets by widening the union.

The single most important challenge facing the WAEMU countries is to reduce poverty through enhanced macroeconomic stability and growth. Wane (2004) finds that the driving force behind growth in WAEMU countries has been investment in human and physical capital, rather than growth in total factor productivity (TFP). He also finds that per capita income in lower-income WAEMU countries converges to that in higher-income countries when economic policies are similar. Aid, government spending, credit to the private sector, and openness positively affect TFP growth, while government deficits affect it negatively. Similarly, Vamvakidis (1998) shows that openness to international trade, competition in the domestic market, freedom of international capital transactions, and low dependency ratios are positively correlated with investment in WAEMU countries.

Instability has been generally identified as an important deterrent to foreign direct investment (FDI) in Africa. Doré, Anne, and Engmann (2003) evaluate the impact of political instability in Côte d'Ivoire. Using a nonsubjective weighted index of regional instability, they find that the increase in regional instability caused by Côte d'Ivoire's political crisis had a negative effect on growth in its closest neighbors, but no significant effect on the WAEMU as a whole. Rogoff and Reinhart (2003) show that while the exchange rate arrangement in WAEMU and other CFA zone countries has contributed to price stability, this was not enough to attract significant FDI. Improved economic governance and transparency might be crucial to attracting such investment.

Daumont, Le Gall, and Leroux (2004) show that government intervention negatively affected financial stability in Sub-Saharan Africa, including in Benin, Côte d'Ivoire, and Senegal. Rother (1998) investigates the stability of regional monetary aggregates and their forecast performance. His money demand estimations suggest a stable relationship for narrow money and allow him to conclude that if the Central Bank of West African States (BCEAO) succeeds in maintaining financial stability, it can continue conducting monetary policy in line with the fixed exchange rate system. Macroeconomic stability, however, also requires sound debt management policies. Beaugrand, Loko, and Mlachila (2002) show that highly concessional external debt financing is at the moment preferable to domestic debt financing both in terms of costs and risks. Looking ahead, West and Central African countries will need to take a gradual approach to domestic debt financing, beginning with issuing short-term bills and establishing a solid track record in meeting their debt-service obligations.

To determine the feasibility and nature of the policy adjustment necessary to meet the new convergence criteria, Doré and Nachega (2000) investigate the relationship between revenue and expenditure in seven WAEMU countries. They show that causality is running from revenue to expenditure in Burkina Faso and Senegal, and from expenditure to revenue in Benin and Togo. They also find bidirectional causality in Côte d'Ivoire and Mali, but no causality in Niger. In reviewing fiscal adjustments undertaken by WAEMU countries since 1994, Doré and Masson (2002) find that the fiscal stance worsened in some countries from 1998-2001 because of terms-of-trade deterioration and unfavorable movements in the business cycle, and that convergence stalled even when corrected for these factors. To meet fiscal deficit targets in the future, the authors recommend that the countries increase revenues and reduce government wages as shares of GDP.

Masson and Pattillo (2001a) discuss how monetary unions could affect fiscal discipline in West Africa. They highlight that fiscal profligacy might be perceived as less costly, either because bailouts could be seen as more likely, or because the cost of unsound fiscal policies would be partially borne by other members. Thus, a West African monetary union could promote fiscal discipline only if the hands of the fiscal authorities were tied by a set of strong fiscal restraints. In this respect, Debrun, Masson, and Pattillo (2002) show that for a monetary union with Nigeria to be in the interests of other countries of the Economic Community of West African States (ECOWAS), it is crucial that Nigeria credibly commit to effective fiscal discipline.

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IMF researchers have also investigated the challenges associated with widening the WAEMU zones to non-WAEMU ECOWAS members. Masson and Pattillo (2001b) evaluate the economic costs and benefits of a wider monetary union in West Africa. Celasun and Justiniano (forthcoming) examine the extent of synchronization between output fluctuations in ECOWAS countries, with a view to assessing the appropriateness of adhering to common monetary and exchange rate policies. They find output synchronization to be very low among ECOWAS countries when compared to Economic and Monetary Union (EMU) countries. However, they also find the Sahelian countries of Burkina Faso, Mali, and Niger to be relatively more synchronized among themselves as well as with Ghana and Guinea, on account of relatively similar climatic conditions. Finally, Nigeria, the largest country in the region and an oil exporter which faces different terms-oftrade fluctuations, experiences largely dissimilar fluctuations in comparison with the rest of the ECOWAS countries.

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Visiting Scholars, October–December 2004

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Books from the IMF The Macroeconomics of HIV/AIDS

Edited by Markus Haacker

HIV/AIDS has emerged as a leading cause of illness and death in much of the developing world, and the epidemic's demographic, social and economic consequences also make it a major threat to development in many countries. For policymakers and analysts working in these countries and in the international community, combating the disease has become part of the broader political and development agenda.

The Macroeconomics of HIV/AIDS, published by the International Monetary Fund to mark World AIDS Day 2004, is a comprehensive resource for public policymakers addressing the economic and fiscal consequences of the crisis. It is intended to bridge the gap between broad national analyses and studies that focus on the epidemic's impact on specific sectors such as health and education. Topics include welfare issues stemming from increased mortality rates and the effect of the epidemic at both the microeconomic and macroeconomic levels on economic growth and investment; education and the accumulation of human capital; poverty and inequality; and public services, government finance, social security, and the health sector. Expertise in all these areas cannot be found in any one institution. The book features contributions by experts from the many international organizations that are key players in the fight against HIV/AIDS and from other institutions concerned with its social and economic consequences.

The Macroeconomics of HIV/AIDS was written for a broad readership, including officials in international organizations, donor agencies, implementing agencies, and national governments who formulate and carry out policies to fight the epidemic, as well as representatives of NGOs advocating an expanded response to HIV/AIDS worldwide.

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Call for Papers IMF Jacques Polak Annual Research Conference

The International Monetary Fund will hold the Jacques Polak Sixth Annual Research Conference at its headquarters in Washington, D.C., on November 3–4, 2005. The conference provides a forum for discussing innovative research in economics, undertaken both by IMF staff and outside economists, and to facilitate the exchange of views among researchers and policymakers.

The theme of this year's conference is **Reforms**. Over the past two decades, many countries have reformed their economies to facilitate a greater role for market forces and to make the institutional environment more hospitable. The conference goal is to present theoretical and empirical research on how consensus develops that enables implementation of reforms, as well as on the consequences of such reforms. Possible topics include, but are not restricted to, the following:

- The political economy of institutional reform
- Financial and monetary system reforms
- · Trade and exchange rate regime reforms
- Fiscal policy and reforms
- · Country experiences with reform
- Microeconomic studies of reform with macroeconomic implications

- The IMF and reforms
- Foreign aid and reforms.

Interested contributors should submit a draft paper or a two-page proposal to the Program Committee that includes the title of the paper, the author(s)' affiliation and contact information, the main questions to be examined, the most relevant literature, the intended contribution of the paper, and the possible data sets and methodology to be employed. Authors should also provide a copy of their curriculum vitae. All presenters will be reimbursed for travel expenses (economy class) and accommodation.

Please submit your proposals (in a Word or PDF file) by April 4, 2005 (e-mail to *ARC2005@imf.org*). Please use the contact author's name as the name of the file. The Program Committee will evaluate all proposals in terms of originality, analytical rigor, and policy relevance and will communicate its decision by late April. A 12-page work-in-progress draft will be required by June 30, 2005 to assure adequate progress toward completion. Further information on the conference program will be posted on the IMF website (*www.imf.org*).



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Conference on Macroeconomic Policy Challenges in Low-Income Countries

The governments of the United Kingdom and the Netherlands, in cooperation with the IMF and the World Bank, launched an international research project in 2004 on the macroeconomic challenges faced by low-income countries. The main goal of the project, which was coordinated by the Global Development Network, was to gain insight from academics based in low-income countries on the effectiveness and scope for improvement of their countries' macroeconomic policies. Selected research papers generated through the project were presented at a conference held at IMF headquarters in Washington on February 15–16, 2005.

The conference was inaugurated by Anne Krueger, IMF First Deputy Managing Director, followed by remarks by Raghuram Rajan, IMF Chief Economist, and Jeroen Kremers, IMF Executive Director. The first session, dedicated to macroeconomic policies, featured presentations on "Bolivia: Impact of Shocks and Macroeconomic Policy on Household Welfare," by Gover Barja Daza and Javier Monterrey Arce, discussed by Gabriela Inchauste, and "Macroeconomic Policies and Poverty Reduction in Malawi: What Can We Infer from Panel Data?" by Ephraim Chirwa, discussed by Francisco Ferreira. The second session on shocks and macro-volatility included presentations by Peter Quartey and Theresa Blankson on "Do Migrant Remittances Minimize the Impact of Macro-Volatility on the Poor in Ghana?" and by B.B. Bhattacharya and Sabayasachi Kar on "Shocks, Economic Growth and the Indian Economy." These papers were discussed by Reena Aggarwal and Ranil Salgado, respectively.

The conference luncheon featured a speech by Charles Soludo, Governor of the Central Bank of Nigeria, on "Challenges of Doing Policy-Oriented Research in Low-Income Countries." A second session on macroeconomic policies followed, including presentations by Yohane Khamfula on "Macroeconomic Policies, Shocks, and Poverty Reduction in South Africa" and by Tulus Tambunan on "Linkages between Macroeconomic Reform Policies, Shocks, and Poverty Reduction: The Indonesian Case." Luca Ricci discussed the first paper, and Aart Kraay the second. The next session was devoted to trade liberalization. The first paper by Kabbashi Medani Suliman was on "The Impact of Trade Liberalization on Revenue Mobilization and Stability in Sudan," and was discussed by Ibrahim El Badawi. The second—on the "Impact of Elimination of Trade Taxes on Poverty and Income Distribution in Ghana" by Vijay K. Bhasin and Samuel Annim—was discussed by Andy Berg.

The last day of the conference began with a presentation by Alan Gelb on "Stabilizing Resource Flows to Meet the Millennium Development Goals." This was followed by a session on fiscal and monetary policy that included presentations by Tabi Atemnkeng Johannes on "Fiscal Policy and Sectoral Productivity Convergence in Cameroon: Implications for Poverty Reduction" and by Robert Asogwa and Charles Ezema on "Domestic Government Debt Structure, Risk Characteristics and Monetary Policy Conduct: Evidence from Nigeria." Ernst van Koesveld discussed the first paper, and Torbjorn Becker the second. During the conference luncheon, Shanta Devarajan spoke about "The Differences in the Macroeconomics of Africa versus South Asia."

In the afternoon, conference participants attended a symposium on "Whither Economic Development?" in which Abhijit Banerjee, Tim Besley, Simon Johnson, Dani Rodrik, and John Williamson joined Arvind Subramanian, the moderator, for an exchange of views on the elusive topic of what drives growth and development. Concluding remarks by François Bourguignon, World Bank Chief Economist, and Adrian Wood, Chief Economist of the UK Department for International Development (DFID), closed the conference. Copies of the papers are available at *http://www.imf.org/external/np/res/seminars/2005/macro/index.htm*. The site also features links to the web cast of the symposium.