



### Editor's Note

Global economic events in recent years have made the effects of *capital controls* on capital flows and on other macroeconomic outcomes of considerable interest to policymakers. The first article in this issue summarizes IMF research on this topic.

Also featured in this issue is a summary of IMF research on *currency unions*. With the advent of the European Economic and Monetary Union and recent proposals for the formation of other regional currency unions, the IMF has been considerably involved in work in this area. IMF researchers have made significant contributions to the academic debate as well as to the shaping of policies related to the formation of currency unions.

As part of its surveillance of the international monetary system, the IMF provides regular assessments of the macroeconomic environment and policies in all of its member countries—industrial as well as developing. This issue's country study highlights analytical work done by IMF staff on the United States.

The special topic in this issue surveys IMF research on the design and effectiveness of fiscal instruments for achieving environmental objectives. This issue also contains a summary of the latest *World Economic Outlook*.

— Eswar Prasad

### Research Summaries

## Capital Controls

Natalia Tamirisa



*The importance of capital flows to the operation of the international financial system has increased dramatically during recent decades. In particular, capital inflows have helped many developing economies to grow rapidly, but have also exacerbated the risks associated with existing distortions and weaknesses and have exposed some of these economies to financial crises triggered by sudden reversals of capital inflows. The use of controls to manage trade in assets, the effectiveness of capital controls, and their overall macroeconomic implications have been subjects of intense debate in both policy and academic circles. IMF staff have contributed extensively to the economic literature on capital controls; this survey focuses on the most recent of these contributions.* (continued on page 2)

## Currency Unions

Paolo Mauro



*The IMF's mandate to conduct surveillance over international exchange rates has led IMF researchers to consider the desirability of, and the requisite supporting policies for, many currency unions in past decades. Given its broad country membership, the IMF analyzes all currency unions, including unions that consist of small developing countries, a subject often underexplored by researchers in developed countries. These small-country currency unions are of interest intellectually and in terms of policy; they also provide lessons of broader relevance. This article surveys the work on currency unions done at the IMF.*

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**IMF Staff Papers**  
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**Capital Controls** (*continued from page 1*)

Capital controls prevailed during much of the twentieth century. By limiting capital outflows, controls were used to facilitate the financing of the two world wars. Controls were also seen as a means to achieve greater monetary policy independence during the Great Depression and to support the functioning of the Bretton Woods system of fixed exchange rates.

Beginning in the 1970s, the developed countries gradually phased out capital controls and, in the 1990s, even the developing countries started to liberalize their capital accounts. This trend reflected a growing acceptance that capital controls (with the exception of prudential ones) tend to be inefficient and costly. Controls are also hard to sustain when domestic financial transactions are liberalized, and they run counter to the aims of a macroeconomic management framework that is designed to work through market forces. The easing of capital controls, along with the revolutions in information and communication technologies, led to a dramatic increase in international capital flows in the 1990s.<sup>1</sup>

Capital flows provide substantial benefits to individual countries and the international economy as a whole, but these benefits may not be fully realized if serious imperfections exist in capital markets (Eichengreen and others, 1998).<sup>2</sup> These imperfections have never been more obvious than during financial crises in emerging markets in the late 1990s, when questions about the role of capital controls were once again brought to the forefront of policy debates.

Capital control regulations are multifaceted, and quantifying them for comparisons across countries and over time is a challenge. Most studies have relied on the use of dummy variables from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (following Grilli and Milesi-Ferretti, 1995).<sup>3</sup> Using new and more disaggregated information in this report, Johnston and others (1999) construct indices that take into account the diversity of capital controls.<sup>4</sup> Edison and Warnock (forthcoming) propose a new measure of the intensity of capital controls for emerging market economies—the ratio of the market capitalizations underlying a country's *International Financial Corporation Investable* and *Global* indices (IFCI and IFCG).<sup>5</sup>

Countries set up capital controls for a variety of reasons. Controls are often associated with fixed or managed exchange rate regimes, lower per capita incomes, larger shares of government consumption in GDP, less independent central banks, and larger current account deficits (Alesina, Grilli and Milesi-Ferretti, 1994; Grilli and Milesi-Ferretti, 1995).<sup>6</sup> Generally, different types of controls serve different purposes. Macroeconomic reasons appear to motivate controls on capital inflows, balance of payments management usually motivates controls on capital outflows, while institutional and market structures typically motivate financial regulations related to the operation of banks and institutional investors (Johnston and Tamirisa, 1998).<sup>7</sup>

Evidence on the effectiveness of capital controls is mixed. Country experiences suggest that capital controls may be useful in dealing with volatile capital flows and may provide some “breathing room” for implementing economic reforms, but they are difficult to administer and cannot substitute for proper macroeconomic policies (Ariyoshi and others, 2000; Ishii, Ötoker-Robe, and Cui, 2001).<sup>8</sup> Not surprisingly, more effective controls tend to be more distortionary as well.

Temporary controls on capital inflows, for example, appear to be effective only when they are highly punitive, and may even lower welfare if the government procrastinates in removing them (Smith and Reinhart, 2001).<sup>9</sup> The effectiveness of Chile's *encaje* (a one-year, mandatory reserve requirement which was imposed on selective, mostly short-term capital inflows during 1991–98) also appears to have been limited. A review of empirical studies on the topic by Nadal-De Simone and Sorsa (1999) concludes that, while there is some evidence that the *encaje* increased interest rates and altered the composition of capital inflows, it had only a temporary impact in reducing specific inflows.<sup>10</sup>

With regard to the use of controls on outflows in times of financial crises, Edison and Reinhart (forthcoming) conclude that only in Malaysia in 1998 did controls lead to greater interest rate and exchange rate stability and more policy autonomy. This was not the case in Brazil in 1999 or in Thailand in 1997, possibly owing to differences in leakage and arbitrage opportunities and in the types of controls.<sup>11</sup> Controls on bank operations and on foreign exchange and equity market transactions appear to have been particularly effective in Malaysia in terms of their impact on capital flows (Meesook and others, 2001).<sup>12</sup>

The macroeconomic effects of capital controls remain a subject of intensive research. Alesina, Grilli, and Milesi-Ferretti (1994) and Grilli and Milesi-Ferretti (1995) find that countries imposing controls tend to have higher inflation rates but lower real interest rates. Such countries apparently enjoy a smaller output loss for a given reduction in the inflation rate (Loungani, Razin, and Yuen, 2000).<sup>13</sup> It has also been shown that capital controls can reduce the informational efficiency of financial markets (Habermeier and Kirilenko, 2001) as well as hinder trade (Tamirisa, 1999).<sup>14</sup> Controls also appear to be important in affecting financial fragility and economic performance (Rossi, 1999).<sup>15</sup> A recent study for the IMF's *World Economic Outlook* estimates that the liberalization of capital controls is likely to promote investment and financial development and could thus increase growth by half a percent a year or more.<sup>16</sup>

Removing capital controls, when macroeconomic policies and the financial system have not been adapted appropriately, raises a risk of external or financial sector instability. Capital account liberalization therefore needs to be coordinated with other policies, and should take into account a country's macroeconomic position, the development of its financial system, and the effectiveness of existing controls (Ishii and others, forthcoming).<sup>17</sup> While there are no simple rules for sequencing, country experiences point to some general principles and methodological approaches. Fundamentally, the removal of capital controls appears to be an important step on the path to development, and no country can isolate itself from the market (at least for very long) without hurting its economic prospects. The challenge is to manage risks in crossborder capital movements, and sound macroeconomic and prudential policies are crucial in this regard.<sup>18</sup>

<sup>1</sup>The increased role of capital flows to the operation of the international monetary system has led to discussions about extending IMF jurisdiction to cover capital movements. See Stanley Fischer, Richard N. Cooper, Rudiger Dornbusch, Peter M. Garber, Carlos Massad, Jacques J. Polak, Dani Rodrik, and Savak S. Tarpore, "Should the IMF Pursue Capital-Account Convertibility?" *Essays in International Finance*, 1998 (Princeton, NJ: Princeton University).

<sup>2</sup>Barry Eichengreen, Michael Mussa, Giovanni Dell'Ariccia, Enrica Detragiache, Gian Maria Milesi-Ferretti, and Andrew Tweedie, *Capital Account Liberalization: Theoretical and Practical Aspects*, IMF Occasional Paper No. 172, 1998. Also see Michael P. Dooley, "A Survey of the Literature on Controls over International Capital Transactions," *IMF Staff Papers* (December 1996).

## Books from the IMF

### West Bank and Gaza: Economic Performance, Prospects, and Policies—Achieving Prosperity and Confronting Demographic Challenges

Rosa A. Valdivieso, Ulric Erickson von Allmen, Geoffrey J. Bannister, Hamid R. Davoodi, Felix Fischer, Eva Jenkner, and Mona Said

The Palestinian economy has undergone severe dislocations as a result of the recent resurgence (beginning in October 2000) of the Palestinian-Israeli conflict. While this book also discusses the economic consequences of the conflict and associated border closures that restrict the movements of labor and goods, the primary focus is on the challenges and opportunities that the Palestinian economy will face over the medium term, especially ones arising from important demographic changes. The West Bank and Gaza has the highest rate of population growth in the world, but this growth is slowing down. Consequently, the share of the working-age population is set to rise markedly over the medium term. This demographic transition can provide an important boost to per capita income growth, but it could also lead to a period of high unemployment or declining real wages, or both. The outcome will largely depend on the policy choices and reforms of various restrictions that currently hamper trade and investment. This volume provides a summary of recent IMF research on these and related issues.

Full-text versions (or, in some cases, detailed summaries) of books published by the IMF are available online at the **Research at the IMF** website at <http://www.imf.org/research>. Follow the link to IMF Publications.

## IMF Occasional Paper No. 206

## The Dominican Republic: Stabilization, Structural Reform and Economic Growth

Alessandro Giustiniani, Werner C. Keller, and Randa E. Sab

This publication analyzes the remarkable economic performance of the Dominican Republic economy in the 1990s. During this period, the country achieved one of the highest rates of output growth among Latin American and Caribbean countries, combined with low inflation and an improved external debt profile. These results were achieved through an impressive and wide-ranging stabilization and structural adjustment effort carried out during the decade, albeit with periodic setbacks. Domestic imbalances were addressed through measures aimed at strengthening public finances, improving monetary control, and reducing distortions in financial markets. Many restrictions plaguing the exchange and trade regimes were removed, thus fostering the integration of the Dominican Republic into the world economy. This study also examines the challenges that lie ahead; the important priorities are to strengthen the financial sector and to reinforce the benefits of previous reforms, with redoubled efforts aimed at enhancing economic policy transparency and governance, among other things.

Detailed contents of IMF Occasional Papers are available at the **Research at the IMF** website at <http://www.imf.org/research>.

<sup>3</sup>Vittorio Grilli and Gian Maria Milesi-Ferretti, "Economic Effects and Structural Determinants of Capital Controls." *IMF Staff Papers* (September 1995).

<sup>4</sup>R. Barry Johnston, Mark Swinburne, Alexander Kyei, Bernard Laurens, David Mitchem, Inci Ötker, Susana Sosa, and Natalia Tamirisa, *Exchange Rate Arrangements and Currency Convertibility: Developments and Issues*, World Economic and Financial Surveys, Chapter 7, 1999. For a summary description of the indices, see Natalia Tamirisa, "Exchange and Capital Controls as Barriers to Trade," *IMF Staff Papers* (March 1999).

<sup>5</sup>Hali J. Edison and Francis E. Warnock, "A Simple Measure of the Intensity of Capital Controls," forthcoming IMF Working Paper.

<sup>6</sup>Alberto Alesina, Vittorio Grilli, and Gian Maria Milesi-Ferretti, "The Political Economy of Capital Controls," in *Capital Mobility: The Impact on Consumption, Investment and Growth*, ed. by L. Leiderman and A. Razin, 1994 (Cambridge, UK: Cambridge University Press).

<sup>7</sup>R. Barry Johnston and Natalia Tamirisa, "Why Do Countries Use Capital Controls?" IMF Working Paper 98/181, 1998.

<sup>8</sup>Akira Ariyoshi, Karl Habermeier, Bernard Laurens, Inci Ötker-Robe, Jorge Iván Canales-Kriljenko, and Andrei Kirilenko, *Capital Controls: Country Experiences with Their Use and Liberalization*, IMF Occasional Paper No. 190, 2000; and Shogo Ishii, Inci Ötker-Robe, and Li Cui, "Measures to Limit the Offshore Use of Currency," IMF Working Paper 01/43, 2001. Also see Pedro Alba, Leonardo Hernández, and Daniela Klingebiel, "Financial Liberalization and the Capital Account: Thailand 1988–97," in *The Political Economy of the East Asian Crisis and Its Aftermath*, ed. by Arvid J. Lukauskas and Francisco L. Rivera-Batiz, 2001 (Cheltenham, UK and Northampton, USA: Edward Elgar).

<sup>9</sup>R. Todd Smith and Carmen M. Reinhart, "Temporary Controls on Capital Inflows," NBER Working Paper No. 8422, 2001, also forthcoming in *Journal of International Economics*.

<sup>10</sup>Francisco Nadal-De Simone and Piritta Sorsa, "A Review of Capital Account Restrictions in Chile in the 1990s," IMF Working Paper 99/52, 1999. Also see Francisco Gallego, Leonardo Hernández, and Klaus Schmidt-Hebbel, "Capital Controls in Chile: Were They Effective?" in *Banking, Financial Integration, and International Crises*, ed. by Leonardo Hernández and Klaus Schmidt-Hebbel (Santiago, Chile: Central Bank of Chile, forthcoming).

<sup>11</sup>Hali J. Edison and Carmen M. Reinhart, "Stopping Hot Money," forthcoming in *Journal of Development Economics*.

<sup>12</sup>Kanitta Meesook, Il Hounng Lee, Olin Liu, Yougsh Khatri, Natalia Tamirisa, Michael Moore, and Mark Krysl, "Malaysia: From Crisis to Recovery," IMF Occasional Paper No. 207, 2001.

<sup>13</sup>Prakash Loungani, Assaf Razin, and Chi-Wa Yuen, "Capital Mobility and Output-Inflation Trade-Off," IMF Working Paper 00/87, 2000, forthcoming in *Journal of Development Economics*.

<sup>14</sup>Karl Habermeier and Andrei Kirilenko, "Securities Transaction Taxes and Financial Markets," IMF Working Paper 01/51, 2001.

<sup>15</sup>Marco Rossi, "Financial Fragility and Economic Performance in Developing Economies: Do Capital Controls, Prudential Regulation and Supervision Matter?" IMF Working Paper 99/66, 1999. For an analysis of consumption smoothing in the presence of capital controls, see Luiz R. de Mello, Jr. and Khaled A. Hussein, "International Capital Mobility in Developing Countries: Theory and Evidence," *Journal of International Money and Finance* (June 1999); and Tim Callen and Paul Cashin, "Assessing External Sustainability in India," IMF Working Paper 99/181, 1999, forthcoming in *Journal of International Trade and Economic Development*.

<sup>16</sup>"International Financial Integration and Developing Countries," *World Economic Outlook, October 2001*, World Economic and Financial Surveys, Chapter 4, 2001. This finding refers to a measure of capital account openness based on gross holdings of international assets and liabilities. Also see Nicola Fuchs-Schündeln and Norbert Funke, "Stock Market Liberalizations: Financial and Macroeconomic Implications," forthcoming IMF Working Paper.

<sup>17</sup>Shogo Ishii, Karl Habermeier, Bernard Laurens, John Leimone, Judit Vadasz, Jorge Iván Canales-Kriljenko, "Capital Account Liberalization and Financial Sector Stability," forthcoming IMF Occasional Paper. Also see Leslie Lipschitz, Tim Lane, and Alex Mourmouras, "Capital Flows to Transition Economies: Master or Servant," forthcoming IMF Working Paper. On how capital controls link with trade, see Byung K. Jang, "Capital Controls and Trade Liberalization in a Monetary Economy," IMF Working Paper 99/24, 1999; and Natalia Tamirisa, Piritta Sorsa, Bradley McDonald, Geoffrey Bannister, and Jaroslaw Wieczorek, "Trade Policy in Financial Services," IMF Working Paper 00/31, 2000, also published in *International Economic Policy Review*, 2000.

<sup>18</sup>R. Barry Johnston and Inci Ötker-Robe, "A Modernized Approach to Managing the Risks in Cross-Border Capital Movements," IMF Policy Discussion Paper 99/06, 1999.

## Currency Unions *(continued from page 1)*

Work related to exchange rate regimes and currency unions is at the core of the IMF's mandate. Member countries of the IMF choose their own exchange rate regimes, but the IMF plays an important advisory role on whether a country's exchange rate regime is consistent with other policies. IMF researchers' interest in currency unions may also have been spurred by Robert Mundell's stint in the IMF Research Department in the early 1960s: his first seminal contributions to the theory of optimum currency areas (OCA) were published about the time he joined the department.<sup>1</sup>

IMF researchers have made significant theoretical contributions in this area of study. Bayoumi (1994) developed possibly the first formal OCA model, obtaining some of the key insights (which had been expressed only discursively in earlier papers) on the role of openness, diversification, labor mobility, and correlation of economic shocks in a general equilibrium context with microeconomic foundations.<sup>2</sup> Ricci (1997) not only examined the real aspects of OCA theory, but also its monetary aspects and the interaction with real aspects, and derived the conditions under which openness makes a currency union more attractive.<sup>3</sup>

Research has also been conducted on fiscal policies within currency unions and on the institutional features of a common central bank. Debrun (2000) argues that fiscal rules are necessary to provide credibility to a monetary union even with an independent central bank.<sup>4</sup> Bayoumi and Masson (1998) provide evidence that fiscal stabilization policies conducted by individual countries within a currency union tend to be less effective than supranational stabilization policies that provide insurance across countries.<sup>5</sup> Debrun (forthcoming) shows that bargaining among founding member countries of a currency union tends to result in a supranational central bank resembling a national central bank with the strongest inflation-fighting credentials.<sup>6</sup>

Empirical work has shown that observed exchange rate and monetary policies can be related to variables identified as important by OCA theory. Bayoumi and Eichengreen (1998) find that pressures on the exchange rate mainly reflect asymmetric shocks, whereas intervention reflects a country's small size and large trade links—the variables that cause countries to value stable exchange rates according to OCA theory.<sup>7</sup> Ricci and Isard (1998) show that the relative variability (against external currencies) of the euro and a basket of predecessor currencies depends on the relative sizes of countries, their sectoral patterns of trade, and the relative importance of different shocks.<sup>8</sup>

Much of the recent work on currency unions at the IMF has focused on whether particular groups of countries have the requisite economic and institutional characteristics for the successful operation of a currency union. As there is no definitive empirical criterion for determining whether a group of countries constitutes an OCA, most empirical analyses compare key OCA variables between existing and proposed unions. Pioneering work in this vein was done by Bayoumi and Eichengreen (1993), who showed that economic disturbances were more correlated among the states of the United States than among the countries of Europe.<sup>9</sup>

With a focus on the **European Economic and Monetary Union (EMU)**, Bayoumi and Prasad (1997) examine sectoral data on output and employment for eight U.S. regions and eight European states, and find that labor market adjustment is slower in Europe than in the United States.<sup>10</sup> Bayoumi and Eichengreen (1997) estimate an OCA index for the European countries, and find that Europe

## IMF Occasional Paper No. 207

### Malaysia: From Crisis to Recovery, 1997–2001

*Kanitta Meesook, Il Houng Lee, Olin Liu, Yougesh Khatri, Natalia Tamirisa, Michael Moore, and Mark H. Krysl*

Malaysia's approach to handling the Asian crisis during 1997–2001 raised much debate about the policy options available to emerging markets for crisis management. This new study reviews Malaysia's approach—which included a fixed exchange rate regime and the introduction of capital controls—and outlines key policy issues confronting the Malaysian authorities at the time of the crisis. Attention is given to the policy mix that helped the economy to recover and the implications for future crisis prevention and management. The authors estimate Malaysia's potential output and provide an analysis of the economy's inflation dynamics. Also included in this study are summaries of analytical work done by IMF staff on a number of related topics including fiscal management, the impact of the capital controls, financial sector restructuring, and corporate sector reforms.

Detailed contents of IMF Occasional Papers are available at the **Research at the IMF** website at <http://www.imf.org/research>.

looked more like an OCA in 1995 than it did in 1987, suggesting that economic integration increased the desirability of monetary integration.<sup>11</sup> Kopits (1999) and Masson (1999) argue that participation in the EMU would be desirable for the **Central and Eastern European countries** that aspire to European Union membership, and outline possible strategies for their exchange rate policies in the interim.<sup>12</sup>

Bayoumi and Eichengreen (1994) find that the underlying economic disturbances are more diverse across the countries of the **North American Free Trade Area (NAFTA)** than across the countries of EMU, implying that the costs of abandoning the exchange rate instrument would be higher in the case of NAFTA. Similarly, they find the correlation of disturbances across **Mercosur** countries to be small and insignificant.<sup>13</sup>

Bayoumi and Mauro (1999) and Bayoumi, Eichengreen, and Mauro (2000) find that on economic criteria (including direction of trade, correlation of aggregate supply shocks across countries, size of shocks and speed of adjustment to them, and degree of similarity of the monetary transmission mechanism across countries) the **Association of South East Asian Nations** seems to be less suitable for a regional currency arrangement than the European Union was before the Maastricht treaty, although the difference is not large; political commitment would be a key factor in improving the chances of success of the proposed union.<sup>14</sup>

Jadresic (forthcoming) argues that, for the countries in the **Gulf Cooperation Council**, moving from individual currencies currently *de facto* pegged to the U.S. dollar, to a single common currency, which would also be strongly linked to the dollar, would yield little added benefit or cost. Nevertheless, a properly implemented currency union might enhance economic efficiency, deepen regional integration, and foster development of the non-oil economy.<sup>15</sup>

Van Beek and others (2000) provide a thorough and comprehensive review of the institutional characteristics of the **Eastern Caribbean Union**, and of recent economic developments in the area.<sup>16</sup> They argue that the common currency arrangement has promoted fiscal discipline, despite the absence of fiscal harmonization targets.

Hoffmaister, Roldós, and Wickham (1998) show that external shocks seem to have a greater impact on **CFA franc zone** countries than on non-CFA countries in sub-Saharan Africa, and argue that this finding may reflect the absence of the exchange rate as a shock absorber for the CFA countries.<sup>17</sup> Masson and Pattillo (2001) argue that a proposed monetary union in **West Africa (ECOWAS)** could create the temptation for fiscal profligacy through prospects of a bailout, or costs diluted through the membership; such a union could promote fiscal discipline only if the fiscal authorities are also tied by a strong set of fiscal restraints.<sup>18</sup>

Guillaume and Stasavage (2000) consider several past, present, and potential currency unions in sub-Saharan Africa, including the **Rand Common Monetary Area**. They argue that currency unions help improve policy credibility, but only under stringent conditions.<sup>19</sup> On the basis of trade patterns and correlations of economic disturbances, Bayoumi and Ostry (1997) find little evidence that sub-Saharan countries would benefit in the future from larger currency unions.<sup>20</sup>

Note: The web version of this article, available at <http://www.imf.org/research>, contains an appendix listing the countries involved in each of the existing and proposed currency unions mentioned above.

<sup>1</sup>Robert Mundell, currently University Professor at Columbia University and the 1999 Nobel Laureate in Economics, was a staff member of the IMF between August 1961 and September 1963. "A Theory of Optimum Currency Areas" was published in the *American Economic Review*, Vol. 51, No. 4, pp. 657–65 (September 1961).

<sup>2</sup>Tamim Bayoumi, "A Formal Model of Optimum Currency Areas," *IMF Staff Papers*, Vol. 41, pp. 537–54, 1994.

<sup>3</sup>Luca A. Ricci, "A Model of an Optimum Currency Area," IMF Working Paper 97/76, 1997 (also published as "Un modèle simple de zone monétaire optimale," *Economie et Prévision*, Vol. 128, 1997).

<sup>4</sup>Xavier Debrun, "Fiscal Rules in a Monetary Union: A Short-Run Analysis," *Open Economies Review*, Vol. 11, pp. 323–58, 2000.

<sup>5</sup>Tamim Bayoumi and Paul Masson, "Liability-Creating Versus Non-Liability-Creating Fiscal Stabilisation Policies: Ricardian Equivalence, Fiscal Stabilisation and EMU," *Economic Journal*, Vol. 108, 1998.

<sup>6</sup>Xavier Debrun, "Bargaining over EMU vs. EMS: Why Might the ECB be the Twin Sister of the Bundesbank?" *Economic Journal*, forthcoming.

<sup>7</sup>Tamim Bayoumi and Barry Eichengreen, 1998, "Exchange Rate Volatility and Intervention: Implications of the Theory of Optimum Currency Areas," *Journal of International Economics*, 1998, Vol. 45, No. 2, pp. 191–210.

<sup>8</sup>Luca Ricci and Peter Isard, "EMU, Adjustment, and Exchange Rate Variability," IMF Working Paper 98/50, 1998 (also forthcoming in *European Economic Review*).

<sup>9</sup>Tamim Bayoumi and Barry Eichengreen, "Shocking Aspects of European Monetary Integration," in *Adjustment and Growth in the European Monetary Union*, ed. by Francisco Torres and Francesco Giavazzi (Cambridge: Cambridge University Press, 1993).

<sup>10</sup>Tamim Bayoumi and Eswar Prasad, "Currency Unions, Economic Fluctuations, and Adjustment: Some New Empirical Evidence," *IMF Staff Papers*, Vol. 44, pp. 36–57 (March 1997).

<sup>11</sup>Tamim Bayoumi and Barry Eichengreen, "Ever Closer to Heaven? An Optimum-Currency-Area Index for European Countries," *European Economic Review Papers and Proceedings*, 1997, Vol. 41, pp. 761–70.

<sup>12</sup>George Kopits, "Implications of EMU for Exchange Rate Policy in Central and Eastern Europe," IMF Working Paper 99/9, 1999; and Paul Masson, "Monetary and Exchange Rate Policy of Transition Economies of Central and Eastern Europe After the Launch of EMU," IMF Policy Discussion Paper 99/5, 1999.

<sup>13</sup>Tamim Bayoumi and Barry Eichengreen, "One Money or Many? Analyzing the Prospects for Monetary Unification in Various Parts of the World," *Princeton Studies in International Finance*, No. 76, 1994; and Tamim Bayoumi and Barry Eichengreen, "Monetary and Exchange Rate Arrangements for NAFTA," *Journal of Development Economics*, 1994. On Mercosur, see also Michael Mussa, Paul Masson, Alexander Swoboda, Esteban Jadresic, Paolo Mauro, and Andrew Berg, *Exchange Rate Regimes in an Increasingly Integrated World Economy*, IMF Occasional Paper No. 193, 2000.

<sup>14</sup>Tamim Bayoumi, Barry Eichengreen, and Paolo Mauro, "On Regional Monetary Arrangements for ASEAN," *Journal of the Japanese and International Economies*, Vol. 14, No. 2, pp. 121–48, 2000; and Tamim Bayoumi and Paolo Mauro, "The Suitability of ASEAN for a Regional Currency Arrangement," IMF Working Paper 99/162, 1999 (also published in *The World Economy*, Vol. 24, No. 7, pp. 933–54, 2001).

<sup>15</sup>Esteban Jadresic, "On a Common Currency for the GCC Countries," IMF Policy Discussion Paper, forthcoming.

<sup>16</sup>Frits van Beek, Jose Roberto Rosales, Mayra Zermeno, Ruby Randall, and Jorge Shepherd, *The Eastern Caribbean Currency Union: Institutions, Performance, and Policy Issues*, IMF Occasional Paper No. 195, 2000.

<sup>17</sup>Alexander W. Hoffmaister, Jorge E. Roldós, and Peter Wickham, "Macroeconomic Fluctuations in Sub-Saharan Africa," *IMF Staff Papers*, Vol. 45, No. 1, 1998. For a review of institutional features, recent developments, and policy issues in the CFA zone, see also Michael T. Hadjimichael and Michel Galy, "The CFA Franc Zone and the EMU," IMF Working Paper 97/156, 1997; and Ernesto Hernández-Catá and

others, *The West African Economic and Monetary Union: Recent Developments and Policy Issues*, IMF Occasional Paper No. 170, 1998.

<sup>18</sup>Paul Masson and Catherine Pattillo, "Monetary Union in West Africa: An Agency of Restraint for Fiscal Policies?" IMF Working Paper 01/34, 2001; and Paul Masson and Catherine Pattillo, *Monetary Union in West Africa (ECOWAS)*, IMF Occasional Paper No. 204, 2001. Appendix II in the latter paper also provides a concise and useful survey of existing and failed currency unions across the world.

<sup>19</sup>Dominique M. Guillaume and David Stasavage, "Improving Policy Credibility: Is There a Case for African Monetary Unions?" *World Development*, Vol. 28, No. 8, pp. 1391–07 (August 2000).

<sup>20</sup>Tamim Bayoumi and Jonathan Ostry, "Macroeconomic Shocks and Trade Flows Within Sub-Saharan Africa: Implications for Optimum Currency Arrangements," *Journal of African Economies*, 1997, Vol. 6, pp. 412–44.

### External Publications of the IMF Staff

A full listing of external publications of IMF staff in the second half of 2001 will appear in the next issue of this bulletin. A searchable database with updated information on recent external publications of IMF staff is available at the **Research at the IMF** website at <http://www.imf.org.research>.

### Visiting Scholars at the IMF, July–September 2001

Michael Bleaney; University of Nottingham, U.K.

Michael Bordo; Rutgers University

John Boyd; University of Minnesota

Kevin Carey; American University

Menzie Chinn; University of California at Santa Cruz

Carl Claussen; Central Bank of Norway, Norway

Rebecca Coke; Belmont University

Giancarlo Corsetti; University of Rome III, Italy

Thomas Cosimano; University of Notre Dame

Allan Drazen; University of Maryland

Jayasri Dutta; University of Birmingham

Michael Funke; Universität Hamburg, Germany

Pietro Garibaldi; Università Commerciale

Luigi Bocconi, Italy

Morris Goldstein; Institute for International Economics

Cheikh Gueye; BCEAO, Senegal

Gregory Hess; Oberlin College

Shigeru Iwata; University of Kansas

Mahmood Khan; Simon Fraser University

Amartya Lahiri; University of California at Los Angeles

Francois Leroux; Ecole des Hautes Etudes Commerciales, France

George Mbangah; University of Yaounde II, Cameroon

Emmanuel Ogunkola; National University of Lesotho, Lesotho

Andrew Rose; University of California at Berkeley

Xavier Sala-I-Martin; Universitat Pompeu Fabra, Spain

Fondoh Sikod; University of Yaounde II, Cameroon

Mark Taylor; Warwick Business School, U.K.

Juergen von Hagen; University of Bonn, Germany

Shang-Jin Wei; Brookings Institution

Thomas Willett; Claremont Graduate University

Yishay Yafeh; The Hebrew University, Israel

Eduardo Yeyati; Universidad Torcuato di Tella, Argentina

## Country Study

## United States

Paula R. De Masi



*The terrorist attacks of September 11 exacerbated underlying weaknesses in U.S. economic activity, resulting in considerable downward revisions to short-term growth prospects. Nevertheless, over the last decade, U.S. economic performance was nothing short of remarkable, hailing the longest U.S.*

*expansion on record. Strong GDP growth combined with low inflation and an acceleration in productivity brought the unemployment rate down to levels not seen in 30 years. Sound fiscal and monetary policies provided a strong foundation supporting the expansion; the federal fiscal balance improved dramatically, culminating in large surpluses in 1998–2001, and monetary policy allowed the economy to expand at a robust pace. This article provides an overview of recent IMF research on some of the key features of U.S. economic performance, the associated policy implications, as well as the potential risks arising from the decline in the personal saving rate, the appreciation of the U.S. dollar, the widening of the U.S. current account deficit, and the rise and subsequent correction in equity prices.*

During most of the 1990s, the unified federal fiscal balance improved more consistently and rapidly than expected. Leidy (1998) shows that the improvement in the cyclically adjusted budget deficit was largely the result of legislated tax increases that raised the structural revenue-to-GDP ratio (by about 2 percentage points) and, to a lesser extent, cuts in discretionary spending.<sup>1</sup> Also contributing to the rise in revenues were shifts in the distribution of income toward higher income groups and a shift in the composition of total income to more of the types that tend to be taxed at higher rates (e.g. wages and salaries).

The fiscal surpluses in FY 1998 reduced the level of federal government debt. The shrinking supply of treasury securities—which play a role in monetary policy operations and serve as benchmarks in financial markets—raised a number of important technical issues. Arora and Luzio (2001) discuss how the Federal Reserve could adapt its operations by broadening the range of financial instruments used in conducting monetary policy.<sup>2</sup> Schinasi, Kramer, and Smith (2001) consider the implications for financial markets where treasury securities serve as bench-

marks for pricing fixed-income securities, instruments for hedging market risk, and safe-haven assets.<sup>3</sup> If government surpluses were to continue and cumulatively exceed the level of redeemable debt, then these funds could be saved to pay for the future liabilities of the Social Security and Medicare programs. Arora and Dunaway (2001) explore the challenges of trying to ensure that such investments are insulated from political pressures and do not have adverse effects on economic efficiency and long-term growth prospects.<sup>4</sup>

With regard to longer-term fiscal issues, a number of studies have addressed various options for reforming Medicare and Social Security as well as the tax system.<sup>5</sup> Leidy and Tokarick (1999) evaluate recent reform proposals and raise concerns about suggestions to transfer general revenues to the Social Security Trust Fund. While most Social Security reform proposals are assessed in terms of the effect on the economy's output, national saving, or the present value of expected benefits relative to contributions, Valdivia (1997) takes into account the value of the Social Security insurance against poverty among the elderly. His analysis illustrates that risk pooling provides welfare gains despite the adverse effects Social Security may have on aggregate saving, employment, and output.<sup>6</sup> Altig, Auerbach, Kotlikoff, Smetters, and Walliser (2001) simulate the impacts of various tax reform proposals and conclude that, while some reforms could offer significant long-run gains in output and welfare, these gains might come at the expense of certain economic groups.

Since the mid-1990s, labor productivity growth has risen to an average annual rate of about 2¼ percent, up from about 1½ percent over the period 1973–95. Whether productivity growth remains strong will be a key determinant of the economy's future course, with implications, in particular, for equity price valuations and the continuation of the improved inflation-unemployment tradeoff.<sup>7</sup> De Masi (2000) reviews recent evidence on the role of information technology in boosting labor productivity growth, and clarifies the debate about whether a “new economy” exists in the United States.<sup>8</sup>

In recent years, the decrease in the personal saving rate and the rise in household debt have raised concerns about the financial stability of households. Cerisola and De Masi (1999) present econometric evidence which suggests that the trend decline in the U.S. personal saving rate can largely be explained by a rise in household equity wealth, improved household access to credit, higher public saving

and per capita Medicare transfers, and lower inflationary expectations.<sup>9</sup>

Since 1995, the dollar has appreciated by about 40 percent on a real, effective basis. With the U.S. current account deficit widening to 4½ percent of GDP in 2000, concerns have centered on the risk of a sustained and sharp depreciation. A number of studies have examined prospects for the dollar and the current account, as well as explanations for the dollar's strength against the euro.<sup>10</sup> In particular, Obstfeld and Rogoff (2001) argue that a reversal in the U.S. current account deficit could have a substantial impact on the real exchange value of the dollar over the medium term; the magnitude of which will depend on the kinds of economic shocks that set off the correction.<sup>11</sup> Arora, Dunaway, and Faruqee (2001) simulate alternative paths for how the current account deficit might evolve, and analyze how the adjustment to a sustainable level could occur over the longer term.<sup>12</sup>

IMF staff have also conducted research on various related U.S. economic issues including the empirical analysis of business cycles,<sup>13</sup> labor markets,<sup>14</sup> aspects of U.S. asset markets,<sup>15</sup> and consumer price index measurement issues.<sup>16</sup>

<sup>1</sup>Michael Leidy, "A Postmortem on the Achievement of Federal Fiscal Balance," *United States: Selected Issues*, IMF Staff Country Report No. 98/105 (September 1998).

<sup>2</sup>Vivek Arora and Rodolfo Luzzo, "Implications of the Reduction in U.S. Treasury Securities for Monetary Policy and Financial Markets," *United States: Selected Issues*, IMF Staff Country Report No. 01/149 (August 2001).

<sup>3</sup>Garry Schinasi, Charles Kramer, and Todd Smith, "Financial Implications of the Shrinking Supply of U.S. Treasury Securities," IMF Working Paper 01/61, 2001.

<sup>4</sup>Vivek Arora and Steven Dunaway, "Investing Government Assets in Private Securities: Policy Options and International Experience," *United States: Selected Issues*, IMF Staff Country Report No. 01/149 (August 2001); and Michael Leidy, "Investing Social Security Trust Fund Assets in Private Securities," *IMF Working Paper* 97/112, 1997.

<sup>5</sup>Jan Walliser, "Would Saving U.S. Social Security Raise National Saving?" IMF Policy Discussion Papers 99/7, 1999; Laurence Kotlikoff, Kent Smetters, and Jan Walliser, "Privatizing Social Security in the U.S.: Comparing the Options," *Review of Economic Dynamics*, Vol. 2, No. 3, 1999; Michael Leidy and Stephen Tokarick, "Fixing Social Security," *United States: Selected Issues*, IMF Staff Country Report No. 99/101 (September 1999); and David Altig, Alan Auerbach, Laurence Kotlikoff, Kent Smetters, and Jan Walliser, "Simulating Fundamental Tax Reform in the United States," *American Economic Review*, Vol. 91, No. 3, 2001.

<sup>6</sup>Victor Valdivia, "The Insurance Role of Social Security," IMF Working Paper 97/113, 1997.

<sup>7</sup>Martin Cerisola and Jorge Chan-Lau, "Tales from Two

Neighbors: Productivity Growth in Canada and the United States," IMF Working Paper 00/169, 2000; Martin Cerisola and Gustavo Ramirez, "U.S. Equity Prices and the Technology Boom," *United States: Selected Issues*, IMF Staff Country Reports No. 00/112 (August 2000); Jorge Chan-Lau and Stephen Tokarick, "Why Has Inflation in the United States Remained So Low?" IMF Working Paper 99/149, 1999; and Vincent Hogan, "Explaining the Recent Behavior of Inflation and Unemployment in the United States," IMF Working Paper 98/145, 1998.

<sup>8</sup>Paula De Masi, "Does the Pickup in Productivity Growth Mean That There is a New Economy?" *United States: Selected Issues*, IMF Staff Country Report No. 00/112 (August 2000).

<sup>9</sup>Martin Cerisola and Paula De Masi, "Determinants of the U.S. Personal Saving Rate," *United States: Selected Issues*, IMF Staff Country Report No. 99/101 (September 1999).

<sup>10</sup>Michael Mussa, "The Relationship Between the Euro and the Dollar," *Journal of Policy Modeling*, Vol. 22, No. 3 (May 2000); and Enrique Alberola, Susana Cervero, Humberto Lopez, and Angel Ubide, "Global Equilibrium Exchange Rates: Euro, Dollar, 'Ins,' 'Outs,' and Other Major Currencies in a Panel Cointegration Framework," IMF Working Paper 99/175, 1999.

<sup>11</sup>Maurice Obstfeld and Kenneth Rogoff, "Perspectives on OECD Economic Integration: Implications for U.S. Current Account Adjustment," in *Global Economic Integration: Opportunities and Challenges*, a symposium sponsored by the Federal Reserve Bank of Kansas City in Jackson Hole, Wyoming, August 24–26, 2000;

<sup>12</sup>Vivek Arora, Steven Dunaway, and Hamid Faruqee, "Sustainability of the U.S. External Current Account Deficit," *United States: Selected Issues*, IMF Staff Country Reports No. 01/149 (August 2001).

<sup>13</sup>Magda Kandil and Aghdas Mirzaie, "Exchange Rate Fluctuations and Disaggregate Economic Activity in the United States: Theory and Evidence," forthcoming in *Journal of International Money and Finance*; Vivek Arora and Athanasios Vamvakidis, "The Impact of U.S. Economic Growth on the Rest of the World: How Much Does it Matter?" IMF Working Paper 01/119, 2001; and Zenon Kontolemis, "Analysis of the U.S. Business Cycle with a Vector-Markov-Switching Model," IMF Working Paper 99/107, 1999.

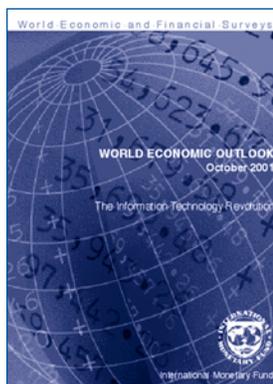
<sup>14</sup>Marcello Esteveo and Saul Lach, "The Evolution of the Demand for Temporary Help," in *Nonstandard Work*, ed. by Francoise Carre, Marianne Ferber, Lonnie Golden, and Stephen Herzenberg (Champaign, IL: Industrial Relations Research Association, forthcoming); Gordon Hanson, Raymond Robertson, and Antonio Spilimbergo, "Does Border Enforcement Protect US Workers from Illegal Immigration?" forthcoming in *Review of Economics and Statistics*; Dalia Hakura, "The Impact of Trade Prices on Employment and Wages in the United States," IMF Working Paper 97/116, 1997; and Eswar Prasad and Alun Thomas, "Labor Market Adjustment in Canada and the United States," *Canadian Public Policy*, Vol. 24 (February), 1998.

<sup>15</sup>Salim Darbar, and Partha Deb, "Linkages Among Asset Markets in the United States," IMF Working Paper 99/158, 1999.

<sup>16</sup>Seyitali Erbas and Chera Sayers, "Is the United States CPI Biased Across Income and Age Groups?" IMF Working Paper 98/136, 1998.

## World Economic Outlook, October 2001

Summary by Maitland MacFarlan



The October *World Economic Outlook* (WEO) was published in the midst of a particularly difficult and uncertain time in the global economy. Growth projections for 2001–02 were already revised downward in almost all regions of the world, compared with figures in the May 2001 WEO; downside risks in the outlook were further exacerbated by the September 11

terrorist attacks in the United States. Quantitative projections were finalized prior to September 11, but implications of the attacks are discussed in the main text of the WEO and in two separate boxes—one assesses possible effects on the global outlook, the other suggests some points of comparison with the 1995 earthquake in Kobe, Japan.

The WEO notes that the vulnerability of the global economy to adverse shocks has been heightened by the fact that there is now no major region that supports global activity, and by the strong cross-border linkages that are increasingly apparent across countries. These **international trade and financial linkages**, across both advanced and developing economies, are explored in detail in two essays. A third essay considers international linkages from the perspective of a possible new multilateral trade round. Further risks to the global outlook arise from external financing difficulties faced by some of the major emerging market economies, and from the pressures that slower growth in some countries could place on weak financial and corporate sectors (particularly in Japan). Given these concerns, the WEO emphasizes that macroeconomic policies need to remain supportive of activity to the extent possible, although there is limited room for maneuver in a number of countries—especially as result of relatively high levels of public deficits or debts. On the positive side, the WEO mentions several factors that should, in time, support economic recovery: these include the substantial macroeconomic policy easing already in progress; stronger economic fundamentals around the globe (including lower inflation and improved fiscal positions); and, in many emerging market economies, greater exchange rate flexibility and lower external vulnerabilities.

One background chapter considers the macroeconomic impact of the **information technology (IT) revolution**. To date, the IT revolution has largely followed the pattern of past technological advances—notably those associated with textiles production, steam power, railroads, and electricity—with an initial phase marked by a boom-and-bust cycle, both in stock prices of innovating firms and in spending on IT-intensive goods. The IT revolution stands out, however, in terms of the exceptionally sharp fall in relative prices of IT goods and the globalized production of these goods. Rapid technological progress in IT production, leading to falling relative prices, has already led to significant economic benefits, including through increased capital deepening and consumer surplus. The chapter concludes that, despite the current slump, the IT revolution will continue to yield substantial benefits to the global economy over the longer term. Many countries need to further strengthen structural policies, however, in order to facilitate the reorganization of production and to fully capture the potential benefits of IT.

A second background chapter analyzes the impact of **international financial integration** on developing countries. It points out that opening up financial markets to the rest of the world is a complex and often long drawn-out process. Less restrictive capital controls can significantly raise domestic investment, create spillovers to the rest of the economy from technological transfers, and deepen domestic financial markets. But, under certain circumstances, opening up the capital account may also entail significant risks. In particular, weak financial supervision and inconsistent macroeconomic policies can be associated with excessive capital inflows that are allocated inefficiently and later lead to rapid capital outflows. The conclusion is that while country experiences indicate there is no simple rule on sequencing capital account liberalization, such reforms need to be accompanied by sound and sustainable macroeconomic policies and coordinated with other measures, financial reforms in particular.

The October WEO can be found in full-text format at <http://www.imf.org/research>. A special issue of the WEO, with updated forecasts, will be available at this website in mid-December.

## IMF Working Papers, July–September 2001

*Working Paper No. 01/80*

**The Macroeconomic Impact of HIV/AIDS in Botswana**  
Macfarlan, Maitland; Sgherri, Silvia

*Working Paper No. 01/81*

**Intellectual Property Rights and International R&D Competition**  
Scandizzo, Stefania

*Working Paper No. 01/82*

**Modeling and Forecasting Inflation in Japan**  
Sekine, Toshitaka

*Working Paper No. 01/83*

**Post-Resolution Treatment of Depositors at Failed Banks: Implications for the Severity of Banking Crises, Systemic Risk, and Too-Big-To-Fail**  
Kaufman, George G.; Seelig, Steven A.

*Working Paper No. 01/84*

**The Impact of the EMU on the Structure of European Equity Returns: An Empirical Analysis of the First 21 Months**  
Kraus, Thomas

*Working Paper No. 01/85*

**Beyond Balanced Growth**  
Kongsamut, Piyabha; Xie, Danyang; Rebelo, Sergio

*Working Paper No. 01/86*

**Resources and Incentives to Reform: A Model and Some Evidence on Sub-Saharan African Countries**  
De Blasio, Guido

*Working Paper No. 01/87*

**The Size and Sustainability of the Nigerian Current Account Deficits**  
Adedeji, Olumuyiwa S.

*Working Paper No. 01/88*

**Stress Testing of Financial Systems: An Overview of Issues, Methodologies, and FSAP Experiences**  
Blaschke, Winfrid J.; Jones, Matthew T.; Majnoni, Giovanni; Peria, Maria Soledad Martinez

*Working Paper No. 01/89*

**Productivity in the OECD Countries: A Critical Appraisal of the Evidence**  
Calderon, Cesar

*Working Paper No. 01/90*

**Investment Banking and Security Market Development: Does Finance Follow Industry?**  
Anand, Bharat N.; Galetovic, Alexander

*Working Paper No. 01/91*

**An Assessment of Fiscal Rules in the United Kingdom**  
Kell, Michael S.

*Working Paper No. 01/92*

**Bond Restructuring and Moral Hazard: Are Collective Action Clauses Costly?**  
Becker, Torbjörn I.; Richards, Anthony J.; Thaicharoen, Yungyong

*Working Paper No. 01/93*

**Consumption-Based Interest Rate and the Present-Value Model of the Current Account: Evidence from Nigeria**  
Adedeji, Olumuyiwa S.

*Working Paper No. 01/94*

**The Gender Gap in Education in Eritrea in 1991–98: A Missed Opportunity?**  
Brixiova, Zuzana; Bulir, Ales; Comenetz, Joshua

*Working Paper No. 01/95*

**Globalization and Firms' Financing Choices: Evidence from Emerging Economies**  
Schmukler, Sergio; Vesperoni, Esteban

*Working Paper No. 01/96*

**Districting and Government Overspending**  
Baqir, Reza

*Working Paper No. 01/97*

**Can Inheritances Alleviate the Fiscal Burden of an Aging Population?**  
Lueth, Erik

*Working Paper No. 01/98*

**“Big Bang” Versus Gradualism in Economic Reforms: An Intertemporal Analysis with an Application to China**  
Feltenstein, Andrew; Nsouli, Saleh M.

*Working Paper No. 01/99*

**Philippines: Preparations for Inflation Targeting**  
Kongsamut, Piyabha

*Working Paper No. 01/100*

**The Two Monetary Approaches to the Balance of Payments: Keynesian and Johnsonian**  
Polak, Jacques J.

*Working Paper No. 01/101*

**The IMF and the Ruble Area, 1991–93**  
Odling-Smee, John; Pastor, Gonzalo C.

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## IMF Research Bulletin

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### Special Topic

## Greening the Tax System

Muthukumara Mani

*Environmental policies in countries are often bolstered by economic incentives. Basic principles established by the economist A. C. Pigou tend to support the use of market instruments such as taxes or tradable permits, in preference to a more conventional regulatory approach, as a way of reducing environmental degradation. Using taxation as an instrument for environmental policy, however, opens up many important issues in terms of revenue recycling, international competitiveness, and natural resource management. This article discusses recent research on these issues undertaken by the IMF Environmental Team (Fiscal Affairs Department).*

Pigovian environmental taxes, set at the level of marginal social damage, have the advantage of inducing firms and individuals to reduce pollution at the level where the costs of doing so are the least.<sup>1</sup> Lighthart (1998a) analyzes the question of how to set optimal fiscal policy when the tax system must perform the dual task of internalizing externalities, on the one hand, and raising revenue to finance public goods, on the other. The second-best optimal environmental tax is, surprisingly, shown to lie *below* the first-best Pigovian tax, as preexisting tax distortions exacerbate the overall efficiency costs of an incremental increase in the pollution tax.<sup>2</sup>

The use of revenues from such taxation practices has also come under scrutiny. Lighthart (1998b) concludes that using the revenues from environmental taxes to cut other taxes may yield employment and environmental dividends if the tax burden can be shifted to agents outside of the labor market, such as onto capitalists, transfer recipients, and foreigners.<sup>3</sup> In practice, however, instead of being used to secure a “double dividend” by also reducing distortionary taxes, revenues from environmental taxes often seem to be earmarked for particular spending programs. Brett and Keen (2000) argue from a political economy perspective that earmarking funds for announced programs—usually ill-advised on efficiency grounds—may enable politically weak “green” politicians to amenably raise environmental tax revenues in the face of political uncertainty.<sup>4</sup>

The environmental implications of trade have also received considerable attention. Fredriksson and Mani (2001) develop a political economy framework to show that trade integration, in general, *increases* environmental taxes by reducing industry lobbying efforts. However, in order to realize the full effects of trade liberalization, they argue that the political system needs to be relatively stable.<sup>5</sup> The use of trade measures such as tariffs and export taxes or outright bans for promoting environmental objectives has also been analyzed. In a recent study on Costa Rica, Kishor, Mani and Constantino (2001) show that eliminating log-export bans could generate considerable economic as well as environmental benefits, provided the resulting increased demand is met from *sustainably managed* forests.<sup>6</sup>

Taxation-based approaches to environmentally sound forest management have also been studied. Leruth, Paris, and Ruzicka (2001) argue that, given the complex nature of factors that influence a given level of exploitation—ranging from logging techniques, to site-specific characteristics such as topography and proximity to urban centers—the basic Pigovian framework may not work for forest and timber taxation. It is not always possible to devise a tax targeted at curtailing the socially damaging activity itself without affecting the output.<sup>7</sup>

<sup>1</sup>John Norregaard and Valerie Reppelin, “Taxes and Tradable Permits as Instruments for Controlling Pollution: Theory and Practice,” IMF Working Paper 00/13, 2000.

<sup>2</sup>Jenny E. Lighthart, “Optimal Fiscal Policy and the Environment,” IMF Working Paper 98/146, 1998a.

<sup>3</sup>Jenny E. Lighthart, “The Macroeconomic Effects of Environmental Taxes: A Closer Look at the Feasibility of ‘Win-Win’ Outcomes,” IMF Working Paper 98/75, 1998b.

<sup>4</sup>Craig Brett and Michael Keen, “Political Uncertainty and the Earmarking of Environmental Taxes,” *Journal of Public Economics* Vol. 75, pp. 315–40, 2000.

<sup>5</sup>Per G. Fredriksson and Muthukumara Mani, “Trade Integration and Political Turbulence: Environmental Policy Consequences,” IMF Working Paper 01/150, 2001.

<sup>6</sup>Nalin Kishor, Muthukumara Mani, and Louis Constantino, “Economic and Environmental Benefits of Eliminating Log Export Bans: The Case of Costa Rica,” forthcoming IMF Working Paper 01/153, 2001.

<sup>7</sup>Luc Leruth, Remi Paris, and Ivan Ruzicka, “The Complier Pays Principle: The Limits of Fiscal Approaches Towards Sustainable Forest Management,” *IMF Staff Papers*, Vol. 48, No. 2, 2001.

## APPENDIX: EXISTING AND PROPOSED CURRENCY UNIONS ANALYZED IN RECENT IMF STUDIES

**European Monetary Union (EMU):** Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain.

**Central and Eastern European Countries potentially joining EMU:** some of the countries that have been analyzed as an illustration include Albania, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, FYR Macedonia, Poland, Romania, the Slovak Republic, and Slovenia.

**North American Free Trade Area (NAFTA):** Canada, Mexico, and United States.

**Mercosur:** Argentina, Brazil, Paraguay, Uruguay, and associate members Bolivia and Chile.

**Association of South East Asian Nations (ASEAN):** Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

**Gulf Cooperation Council:** Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

**Eastern Caribbean Union:** Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines.

**CFA Franc zone:** Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo, members of the West African Economic and Monetary Union; and Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, and Gabon, members of the Central African Economic and Monetary Community.

**West Africa (ECOWAS):** a proposed union including The Gambia, Ghana, Guinea, Nigeria, and Sierra Leone, and possibly, at a later stage, those other members of ECOWAS currently using the CFA franc (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo).

**Rand Common Monetary Area:** Botswana, Lesotho, South Africa, and Swaziland.