



Globalization and Monetary Policy Institute

2010 Annual Report

Federal Reserve Bank of Dallas

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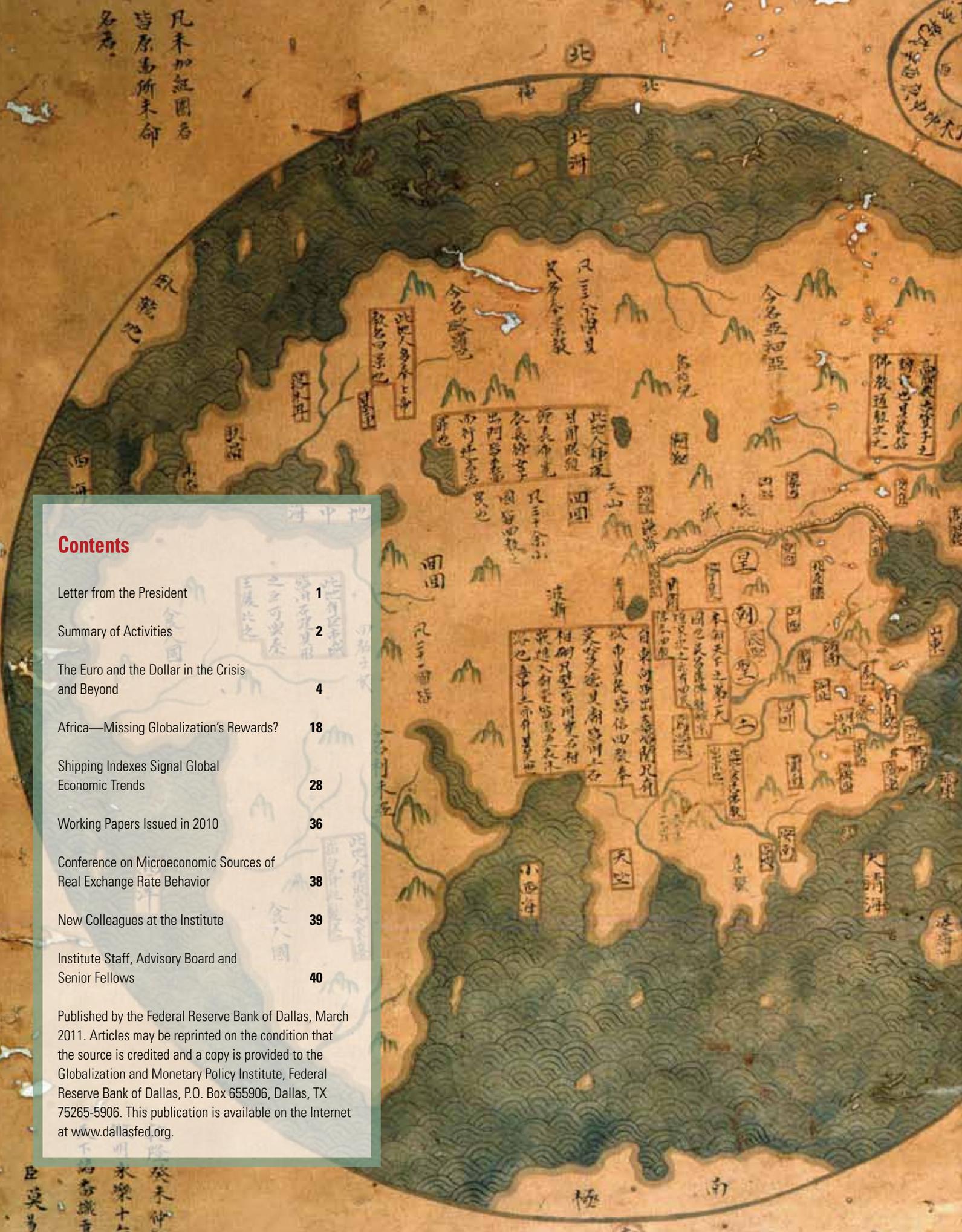
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Letter from the President



As we enter the second decade of the new century, the global economy finds itself on a firmer footing, despite political unrest in the Middle East and Northern Africa and the disasters in Japan. While growth in the advanced economies has yet to fully eliminate the output gap that emerged during the financial crisis, progress in the emerging market economies has been better, and the concerns of policymakers in those economies have shifted from sustaining growth to reining in incipient inflation pressures.

This year's Globalization and Monetary Policy Institute annual report contains three articles on different aspects of globalization. The first, by Enrique Martínez-García and Janet Koech, is a summary of a conference the institute hosted at the Dallas Fed in March to (somewhat belatedly) mark the 10th anniversary of the creation of the euro. The essay goes beyond a simple summary of what was discussed at the conference to put the creation of the euro in a broader historical and economic perspective. The euro's creation in 1999 was an event of enormous significance, but not one without risks. The European Central Bank has so far successfully fulfilled its mandate for price stability, but the tensions in euro sovereign debt markets that emerged in 2010, precipitated by developments in Greece and Ireland, seem to have vindicated the concerns of some prior to the launch of the project.

The second essay, by Janet Koech, looks at why, of all the major regions in the world, Africa seems to have benefited the least from globaliza-

tion. The continent is rich in natural resources and has become an important destination for foreign direct investment (FDI) by emerging market economies—especially China—seeking to secure access to raw materials vital to their long-term growth. Before the global downturn, the continent's FDI inflows surged to a record high, although the numbers still compare unfavorably to those in other developing regions. Africa's prospects for sustained growth and development depend on continuing efforts to draw more such investment, including achieving political stability.

The final essay, by Payton Odom, looks at how well we measure the cost of shipping goods internationally. Despite dramatic changes in the tradability of many services, the bulk of international trade is still trade in goods. Changes in trade flows—and in the cost of shipping goods—are a potentially useful source of information about the state of the global economy.

These essays give but a flavor of the wide array of research projects that are under way at the institute. For a more comprehensive view of the work going on at the institute, please take a look at the list of working papers that have been produced by staff and associated researchers over the past year.

A handwritten signature in black ink that reads "Richard W. Fisher". The signature is written in a cursive, flowing style.

Richard W. Fisher
*President and CEO
Federal Reserve Bank of Dallas*

While growth in the advanced economies has yet to fully eliminate the output gap that emerged during the financial crisis, progress in the emerging market economies has been better, and the concerns of policymakers in those economies have shifted from sustaining growth to reining in incipient inflation pressures.

Summary of Activities 2010

Since we began our research program on globalization and monetary policy, we have believed that a reputation for excellence in this area will be built on a foundation of solid, peer-reviewed academic research. To that end, during 2010 the Globalization and Monetary Policy Institute staff and research associates circulated 27 new working papers (of which seven were contributed by the institute's core permanent staff), bringing to 67 the total number of working papers issued since the institute was created in 2007. Through mid-December, the 67 items that had appeared in the working paper series had received a total of 5,550 abstract views and 2,903 file downloads.

Academic Research

Of course, working papers are just an intermediate product. The real measure of success is the extent to which these papers appear in quality journals and, in particular, the extent to which the permanent staff is successful in publishing in top journals.

Anthony Landry's paper on "The Quantitative Role of Capital-Goods Imports" (coauthored with Michele Cavallo and circulated as institute Working Paper no. 47 in 2010) was published in the *American Economic Review Papers and Proceedings* issue in May, and his paper on "State-Dependent Pricing, Local-Currency Pricing and Exchange Rate Pass-Through" (which previously appeared as institute Working Paper no. 39 in 2009) was published in the *Journal of Economic Dynamics and Control* in October. Jian Wang's paper "International Trade in Durable Goods: Understanding Volatility, Cyclical-ity, and Elasticities" (coauthored with institute senior fellow Charles Engel and previously circulated as institute Working Paper no. 3 in 2007) was accepted for publication and appeared in the *Journal of International Economics*. Enrique Martínez-García's paper "A Model of the Exchange Rate with Infor-

mational Frictions," (which previously circulated as institute Working Paper no. 2) was published in the *B.E. Journal of Macroeconomics* in January 2010. A variety of other papers by institute staff are at various stages of the review process at journals such as the *Journal of Political Economy*, the *Journal of International Economics*, the *Journal of Money, Credit and Banking* and *Macroeconomic Dynamics*.

Conferences

Institute staff members continue to be active organizing sessions and presenting at the leading professional conferences. Anthony Landry organized and chaired a session on "Open Economy Economic Growth" at the January meetings of the American Economic Association in Atlanta. The papers from this session, including Landry's paper, were published in the *American Economic Review Papers and Proceedings* in May. Staff gave a number of seminars at universities during the year and were active in the major conferences, including the World Congress of the Econometric Society, the Society for Economic Dynamics, the Canadian Economics Association annual meeting, the 16th International Conference on Computing in Economics and Finance, and the Western Economic Association annual meeting, among others.

In March the institute organized and hosted a conference with the Peterson Institute for International Economics in Washington, D.C., and the Brussels-based think tank Bruegel to mark the 10th anniversary of the euro. The conference included presentations by speakers from the International Monetary Fund, European Central Bank, European Commission, Bank of England and Bank of Portugal and was very well attended. (See related article on page 4.) The day after the euro conference, the institute hosted a one-day meeting of the Economics Interest Section of the European

Union Studies Association. We also organized a conference on “Microeconomic Sources of Real Exchange Rate Behavior” with the Center for International Price Research at Vanderbilt University on Sept. 24–25. (See the conference program on page 38.)

Bank Publications

Institute staff contributed a number of articles to Bank publications during the year. Two articles appeared in the Bank’s *Economic Letter* during the first quarter: “A Historical Look at the Labor Market During Recessions” by Enrique Martínez-García and Janet Koech in January, and “Durable Goods and the Collapse of Global Trade” by Jian Wang in February. Ananth Ramanarayanan’s *Economic Letter* on “Sovereign Debt: A Matter of Willingness, Not Ability, to Pay” appeared in September, as did Enrique Martínez-García and Mark Wynne’s *Staff Paper* on “The Global Slack Hypothesis” (which was based on their presentation to the Federal Open Market Committee in 2009). Simona Cociuba’s *Economic Letter* on “Financial Crisis Revives Interest in Special Drawing Rights” appeared in October. Anthony Landry’s *Economic Letter* on “The Globalization of Ideas” appeared in November.

Visitors to the institute also contributed to Bank publications: Andrew Cassey’s *Staff Paper* on “Analyzing the Export Flow from Texas to Mexico” appeared in October. Shalah Mostashari’s *Economic Letters* on “When Tariff Cuts Don’t Boost Import Variety” and “Expanding Variety of Goods Under-scores Battle for Competitive Advantage” both appeared in December.

Visitors and Research Associates

We continue to add to our roster of research associates. Joining our network in 2010 were Pierpaolo Benigno (LUISS), Martin Berka (Massey

University), Ester Faia (Goethe University), Rasmus Fatum (University of Alberta), Christoph Fischer (Deutsche Bundesbank), Ippei Fujiwara (Bank of Japan), Kathryn Russ (University of California–Davis), Raphael Schoenle (Brandeis University), Etsuro Shioji (Hitotsubashi University), Ina Simonovska (University of California–Davis) and Kozo Ueda (Bank of Japan).

Andrew Cassey from Washington State University began a month-long visit in June to work on the determinants of Texas–Mexico trade. Erasmus Kersting of Villanova University visited several days a week in June to work on a project on credit market imperfections and endogenous growth with Enrique Martínez-García. Greg Johnson, a PhD student at SMU, worked for the institute as a summer intern, examining the relationship between financial globalization, risk sharing and contagion. Joaquín López, a PhD student at the University of Chicago, also worked as a summer intern at the institute, looking at modeling real exchange rate dynamics. Russell Cooper, a professor at the European University Institute in Florence, Italy, visited for a week in June and began a project with Mark Wynne on monetary unions, fiscal rules and bailouts that will seek to develop a more formal understanding of the factors leading to the recent (and not yet fully resolved) crisis in Greece and the European Monetary Union. In the fall, two institute staff members (Simona Cociuba and Ananth Ramanarayanan) went on leave as visiting associate professors to the University of Western Ontario in Canada. Shalah Mostashari, a recent PhD from the University of Texas at Austin, visited the institute for the fall 2010 semester and worked on issues related to international trade. Mostashari also contributed a paper to the institute’s working paper series.

—Mark Wynne

The Euro and the Dollar in the Crisis and Beyond

The euro has survived its first decade, overcoming questions about its viability and political and economic *raison d'être*. “The Euro and the Dollar in the Crisis and Beyond,” a conference sponsored by Bruegel, the Peterson Institute for International Economics and the Federal Reserve Bank of Dallas, marked the milestone on March 17, 2010, with discussions of Europe’s monetary integration, the euro’s global role relative to the dollar and the currency’s prospects in the aftermath of the 2008–09 global recession.

Adam Posen, senior fellow at the Peterson Institute and member of the Monetary Policy Committee of the Bank of England, set the tone in opening remarks, referring to “what is a very critical economic relationship and some very interesting economic issues” involving the single currency. **Vítor Gaspar**, a special adviser of the Banco de Portugal and former director general of research at the European Central Bank (ECB),

lauded the euro’s “extremely successful [run] in its first decade” and its “continued success,” citing the currency’s expansion into eastern Europe and the ECB’s emergence as a credible guardian of price stability.

Still, conference participants were cautious, noting that common monetary policy alone may be insufficient for macro stabilization. The global downturn and subsequent sovereign debt crisis constitute a major test of whether the euro’s benefits justify its costs. Lessons learned from the experience may affect economic and monetary integration in Europe and elsewhere. In this essay we revisit the conference insights regarding the euro in light of its long history and its complex economic underpinnings.

Genesis of the European Single Currency

In the years after World War II, stable exchange rates and removal of trade and payment restrictions supported the economic recovery and reconstruction. The United Nations Monetary and Financial Conference at Bretton Woods, N.H., in 1944 laid the groundwork for a new international monetary order. It concluded with an agreement to peg participating nations’ currencies to gold, within narrow bands of fluctuation of plus/minus 1 percent, while allowing some leeway to adjust parities.¹

The International Monetary Fund (IMF) was to provide temporary funding to sustain the peg, while capital account restrictions were accepted under Bretton Woods for countries with pegged currencies so they could maintain some control over domestic monetary policy. The General Agreement on Tariffs and Trade (GATT) in 1947 brought a new impetus for trade liberalization and multilateral trade negotiations.

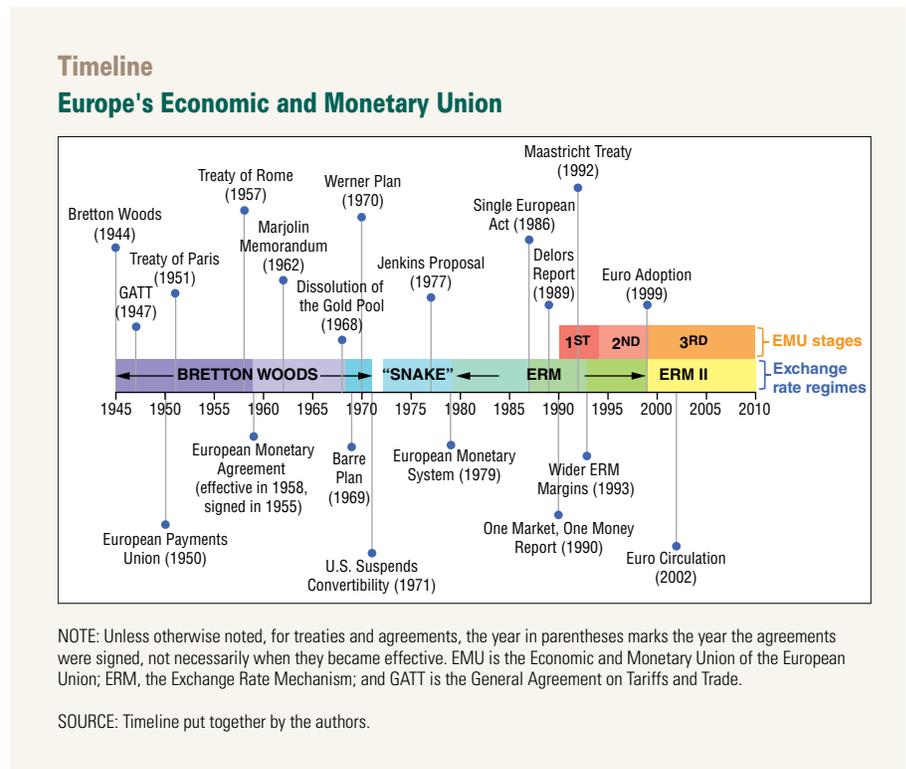


Adam Posen from the Peterson Institute for International Economics, Vítor Gaspar from Banco de Portugal and Richard Fisher, president and chief executive officer at the Federal Reserve Bank of Dallas.

The Organization for European Economic Cooperation (OEEC) was established in 1948—predecessor to the Organization for Economic Cooperation and Development (OECD), created in 1961—in part to channel Marshall Plan funds (the U.S. European Recovery Program) to western Europe. The OEEC under its Secretary-General Robert Marjolin also promoted trade and establishment in 1950 of the European Payments Union (EPU) as a clearinghouse for the multilateral settlement of payments. The EPU was replaced in 1958 with the European Monetary Agreement (EMA) amid stricter requirements for net deficit settlement. Greater current account and currency convertibility followed, leading to the heyday of Bretton Woods.

European integration took a step forward with the Treaty of Paris establishing the European Coal and Steel Community (ECSC) in 1951, under which France and West Germany pooled their coal and steel resources with Belgium, Italy, Luxembourg and the Netherlands. The same countries signed the Treaties of Rome in 1957 establishing the European Economic Community (EEC) and the European Atomic Energy Community (EAEC). The EEC sought to advance toward a unified market for goods, services, workers and capital—the Common Market—through a customs union to promote trade in industrial goods and through a common agricultural policy conferring special protected status to agriculture.²

The seminal works of Robert A. Mundell (1961), Ronald I. McKinnon (1963) and Peter B. Kenen (1969) on optimal currency areas helped develop an economic rationale for the euro. However, Marjolin, European Commission vice president at the time, was the first EEC official to publicly recognize in 1962 that the Common Market might require more than the Treaty of Rome's



customs union or the Bretton Woods' fixed (but adjustable) peg. In a memorandum, he urged a common monetary policy and single currency for EEC member states.

"... the emergence of a European reserve currency would considerably facilitate international monetary co-operation and a reform of the present system. ... The Treaty [of Rome] makes provision for a common commercial policy but not for a common monetary policy; this is an obvious gap which needs to be bridged."³

The process of European monetary union, however, did not formally begin until 1990—almost 30 years after Marjolin advocated a common monetary policy.

The Cost of a Common Monetary Standard

Mundell (1961) defined a currency area as

Box 1**Asymmetric Demand Shifts and the Costs of a Fixed Exchange Rate Regime**

Robert A. Mundell (1961) assumed that nominal wages and prices “cannot be reduced in the short run without causing unemployment” and studied the effect of an asymmetric demand shift from, say, Italian to German goods. The shift causes a current account surplus, employment growth and cost pressures in Germany, while lowering employment and inflation in Italy. In a floating exchange rate regime, the appreciation of the deutsche mark in response to the demand shift turns “the terms of trade against” Germany and the resulting increase in demand for Italian goods reduces Italy’s deficit without worsening its employment or creating inflation in Germany.

Under a fixed (nominal) exchange rate regime, the real exchange can still allow needed external adjustments if Germany is willing to let its domestic prices rise or Italy is willing to make its prices fall. In the first scenario, German goods become more expensive than Italian ones as German prices increase, so consumers substitute away and shift the demand back toward Italian-made goods. In the second scenario, if Germany chooses to use its domestic monetary policy to keep German inflation subdued and maintain price stability, Italy can only eliminate its current account deficit with domestic policies that reduce prices and employment. In the former case, Germany suffers the external adjustment costs with higher inflation, while in the latter instance, Italy bears those costs with depressed levels of employment.

If domestic monetary policy is curtailed either by freer capital movements under a common monetary standard or by forming a full monetary union, then “to relieve the unemployment in [Italy] the central banks in both countries would have to expand the national money supplies, or to prevent inflation in [Germany], contract the national money supplies... [but] both unemployment and inflation cannot be escaped.” The reallocation of labor from Italy to Germany can accomplish the desired external rebalancing maintaining the fixed rate by reducing unemployment in Italy (through migration) and raising the demand for German goods from within—while damping the cost pressures in Germany.

“a domain within which exchange rates are fixed,” not necessarily coinciding with existing political borders. Conference participants echoed this idea, but noted the complexities of assessing the costs and benefits of giving up the exchange rate to form a currency area. In Mundell’s (1961) judgment, a country’s costs of joining depend on how well it manages its economy absent the exchange rate and how the burden of adjustment is shared by all countries maintaining fixed rates (*see Box 1*). He argued that the costs of fixing the exchange rate must be small if internal factor mobility—the movement of production inputs, especially labor—is high relative to mobility outside the area. In that case, a fixed exchange rate arrangement is likely to be optimal even if the benefits are otherwise modest.

Progress on structural reform involving European economic integration has been slow, especially because of insufficient factor mobility and institutional impediments such as varying degrees of centralized wage bargaining among countries. **Ajai Chopra**, deputy director of the International Monetary Fund’s (IMF) European department, told the conference: “One could argue that differences in structural flexibility and [the] different pace of reform ... in different parts of the euro area have also contributed to imbalances [that is, uneven economic performance] given the common monetary policy.”

Under Bretton Woods, western Europe had moved toward establishing a *common monetary standard*, defined as a credible and irrevocably fixed exchange rate regime where national currencies remain in circulation. Preserving such a common standard was difficult because of slow progress implementing necessary structural reforms to reduce the costs of fixing the exchange rate. In turn, adhering to a common monetary policy and sharing the burden of adjustment rested on a framework of greater policy coordination. Without verification and clear accountability, such voluntary commitments could not survive—

as EEC experience during the 1960s and 1970s underscores. The “economic performance [of Europe] and its resilience ... depend very much not only on the quality of the policies but also on the quality of the policy frameworks,” Chopra concluded.

Achieving Marjolin’s vision for a single currency and *monetary union* required more than a common monetary standard. It called for a single currency to replace the national currencies and a common monetary policy. That entailed surrendering domestic monetary policy and limiting economic divergence among EEC member states. Mundell (1961) argued that a common monetary standard and a monetary union “can be brought closer together by an institutional change ... [to share] the burden of international adjustment.” However, the limitations of policy coordination were apparent every time that national interests diverged. By contrast, the option of monetary union provided a more credible framework based on a binding commitment among all member states.

The Credibility of a Common Monetary Standard

The currency of a country credibly committed to low and stable inflation offers a reliable store of value and, therefore, can become a preferred means of exchange and anchor for a fixed exchange rate area. The anchor currency predominates, while the other countries are forced to import the monetary policy of the “dominant” country (especially as capital mobility increases) or abandon the peg.⁴ A common monetary standard may collapse from loss of confidence in the monetary policy of the dominant country or loss of confidence in the willingness of the other members to import the dominant country’s policies.

The demise of Bretton Woods—accelerated after the dissolution of the London Gold Pool in 1968—culminated when the dollar became inconvertible, closing the gold window in 1971, and freely floating in 1973.⁵ The monetary policy

of the U.S., the dominant country under Bretton Woods, was constrained by its long-standing commitment to gold convertibility and, by extension, to monetary growth and price stability. Bretton Woods unraveled in part because the U.S. progressively abandoned its commitment to price stability during the 1960s—replacing a monetary rule with discretion (and looser monetary policy) for everybody. The concern in European policy circles was that this new era of fiat monies and floating rates would hamper the overarching goal of establishing the Common Market. European officials didn’t seek a return to gold convertibility or the dollar-anchor, but aimed to reengineer an intra-EEC common monetary standard during the 1970s.

In 1970, a panel of experts chaired by Luxembourg Prime Minister Pierre Werner—building on a 1969 proposal by European Commission Vice President Raymond Barre—advocated the adoption of a single currency and a common monetary policy in part to prevent the emergence of a domi-



David Mayes, director of the Europe Institute at the University of Auckland.

nant country's unconstrained monetary policy. The EEC agreed in 1972 to closer policy coordination and narrowing the margins of participating currencies to plus/minus 2.25 percent, a system known as the "European snake." A European unit of account was established, but the Bundesbank's reputation for price stability lifted the deutsche mark to become the de facto anchor currency.

The snake didn't last, as countries opted for greater domestic autonomy when confronted with a decade of high inflation and low growth, even as European Commission President Roy Jenkins renewed the call for monetary union in 1977. The European Monetary System (EMS) was launched in 1979 around a grid of adjustable central parities with fixed margins—the exchange rate mechanism (ERM). It introduced the European currency unit (ECU) as a fixed-weight basket of member states' currencies and set the ERM margins at plus/minus 2.25 percent of the ECU (plus/minus 6 percent for some countries). The low-inflation deutsche mark again asserted itself as de facto anchor. More stable

exchange rates and tamed inflation within the EEC were not attained until the 1980s.

The credibility of a fixed-rate regime depends not only on the price stability commitment of the dominant country, but also on that commitment being shared by all participating currencies. **Carlos Zarazaga**, senior economist and policy advisor at the Federal Reserve Bank of Dallas, drew on the dollarization experience in Latin America to argue that credibility is fundamental when evaluating the advantages of a currency area and when comparing a monetary union with a common monetary standard.

One potential advantage of joining a currency area is to constrain inflationary policies among countries accustomed to financing themselves through money creation, a past practice of some Latin American countries. Merely fixing the exchange rate does not solve the high-inflation problem because a fixed-rate rule is no more credible than a commitment to price stability. The temptation to temporarily boost economic activity by deviating from the monetary policy of the low-inflation country often proves too strong to resist when policymakers are tolerant of inflation and the possibility of devaluating cannot be excluded. Such an option is incorporated into expectations, helping produce persistent inflation differentials, diverging monetary policies and recurring bouts of exchange rate instability.

Surrendering domestic monetary policies and forming a monetary union—even unilaterally, by adopting the dollar as legal tender through dollarization—is one way to credibly commit to a fixed exchange rate rule. "It has become clear [now] that the adoption of the currency of the low-inflation country doesn't import the institutions behind that currency's reputation," Zarazaga told the audience. Although the goals of dollarization partly materialized in Latin America through reduced inflation and improved monetary discipline, the framework achieved a mixed record as a means of raising living standards and promoting trade, competitive-



Enrique Martínez-García from the Federal Reserve Bank of Dallas and Antonio de Lecea from the Delegation of the European Union in Washington.

ness and growth, he said.

Latin American countries that dollarized were ready to accept the U.S. monetary policy unconditionally. The EEC, on the other hand, favored the creation of supranational institutions representative of the interests of all its member states. Establishment of the ECB has been a major accomplishment, Gaspar said. It required convincing the low-inflation country (Germany) to cede control over its domestic monetary policy. In return, the joint central bank pledged to adhere to the monetary policy preferred by the low-inflation country and adopted a hard line on inflation to build its reputation. The ECB, indeed, was endowed with independence and given a single mandate, price stability. By comparison, the Federal Reserve's dual mandate seeks "maximum employment" and price stability.

The Trade-Offs of Financial Liberalization

The costs of a monetary union extend beyond those of fixing the exchange rate considered by Mundell (1961), because countries surrender control over their domestic monetary policy. The "impossibility trinity" principle, based on the work of J. Marcus Fleming (1962) and Mundell (1963), states that a country cannot simultaneously maintain a fixed or highly managed exchange rate, an independent domestic monetary policy and free movement of capital. A country must choose two of the three and give up the other. As capital mobility increases, countries joining a common monetary standard lose more control over domestic monetary policy while adhering to the fixed exchange rates. Full monetary union entails surrendering domestic monetary policy no matter the degree of capital mobility. The difference in the costs of forming a full monetary union or preserving the common monetary standard narrows as nations remove capital account restrictions to facilitate freer capital movements.

Mundell (1973), in turn, argued that the

gains of a currency area would be larger if the participating countries can better "insure" one another against asymmetric shocks. This provided a rationale for capital account liberalization and strengthened the case for intra-EEC financial integration. The Common Market involved a provision for free movement of capital, but, in effect, capital account controls became the norm during the 1970s following the collapse of Bretton Woods and the first oil shock in 1973. European countries tried restricting capital account movements to maintain some degree of monetary policy autonomy while attempting to restore an intra-EEC common monetary standard. By the time the EMS became operational in 1979, the second oil shock hit, and it was almost assumed that capital controls, and frequent parity realignments, would be unavoidable.

Having tamed the high inflation that plagued much of the world by the mid-1980s, the EEC vigorously renewed efforts toward capital account liberalization. The Single European Act in 1986 became a major step toward freer movements of capital, people and services. "One couldn't speak of freedom of capital movements" within the EEC until then, said **Nicolas Véron**, senior resident fellow at Bruegel, while noting that harmonization of institutions and regulations may have lagged. He cited slow development of European accounting standards as an example of lingering impediments to capital flows. **Garry Schinasi**, visiting fellow at Bruegel, said that greater European financial integration wasn't accompanied by a conclusive debate at the European Union (EU) level on supranational financial regulation and supervision, still largely the prerogative of national governments.

Conference participants raised a number of caveats concerning the role of financial integration and capital account liberalization, based on the euro's experience. **Zsolt Darvas**, a research fellow from Bruegel, said financial spillovers can make countries more exposed to external shocks. Financial liberalization and trade expansion have been surprisingly rapid in eastern Europe even

as nations there prepare for EU membership, he noted, allowing the region to catch up with western Europe. At the same time, eastern Europe was especially affected by the 2008–09 recession and shocks originating from the advanced countries. “Integration made these [eastern European] countries more vulnerable,” Darvas said. The EU has provided some assistance, and the region avoided the “worst problems from past crises, such as currency overshooting, bank runs and banking system collapse,” Darvas added.

Thomas Glaessner, a Citigroup managing director and global policy strategist, questioned how much international capital market diversification is possible following removal of capital controls and other restrictions. “If you really look carefully at how correlated all asset prices have been into the crisis and out of the crisis, [it] is really, really exceptional. [Many investors] really are rethinking whether [they] are getting the diversification [they] thought [they] were getting,” Glaessner said. In other words, impediments to intra-European risk-sharing may persist in spite of capital account liberalization. However, absent these impediments,

international diversification still may not produce the benefits envisioned by Mundell (1973) when there is strong comovement across such a large class of assets.

Joseph Gagnon, senior fellow at the Peterson Institute, noted that the transmission mechanism of monetary policy can be severely affected when banking and other financing channels become impaired, as they did globally beginning in 2007. It is not obvious whether liberalization makes the financial system more resilient, but he argued that the 2008-09 global recession showed monetary policy must be unconventional to be effective in response to a financial crisis.

The Foundations of Monetary Union

A committee chaired by European Commission President Jacques Delors recommended in 1989 that economic and monetary union (EMU) be achieved in three “discrete, but evolutionary steps” (see Box 2). The Treaty of Rome was updated, with the Treaty on European Union (the “Maastricht Treaty”) signed in 1992.⁶ Adoption of the euro required that all national central banks be independent and was conditional upon fulfillment of convergence criteria (Chart 1). Denmark and the U.K. were granted special status that did not oblige them to adopt the euro.

The convergence criteria sought to ensure sustainable intra-EU fixed exchange rates and a commitment to price stability shared by all. The criteria were also meant to assure Germany, the low-inflation country, that it would lose little after replacing its own currency and surrendering its independent monetary policy. However, the criteria neither guaranteed that the currency area was optimal nor likely to become so. Following the German reunification in 1990, the fixed parities of the ERM became increasingly difficult to maintain for some countries. The devaluation of the Italian lira in 1992 set in motion a chain of events that forced some permanent departures (the U.K.) and a widening of the fluctuation margins of the ERM

Box 2

Three Stages of Economic and Monetary Union

Stage 1 July 1, 1990–Dec. 31, 1993

- Full liberalization of capital movements; financial integration
- Increased monetary cooperation

Stage 2 Jan. 1, 1994–Dec. 31, 1998

- Establishment of European Monetary Institute (EMI), forerunner of the European Central Bank (ECB)
- Nominal convergence criteria installed; national central banks’ independence required
- Fiscal policy coordination arrangements formalized under the Stability and Growth Pact (SGP)

Stage 3 Jan. 1, 1999–Present

- Exchange rates irrevocably fixed; single monetary policy
- The ECB and the European System of Central Banks (ESCB) become operational
- Exchange Rate Mechanism II (ERM II) established for future euro area candidates
- Banknotes and coins introduced; the euro becomes sole legal tender in 2002

to plus/minus 15 percent in 1993. The resulting dilution of the requirement of exchange rate stability did not help dispel doubts on whether the euro's costs truly outweighed its benefits.

The Maastricht Treaty's budgetary convergence criteria were added to constrain the least-disciplined countries (*Chart 1D, E*). One conventional view is that price stability need not require that fiscal policy be subordinate to monetary policy. Michael Woodford (1996) argued that monetary policy cannot simultaneously accommodate fiscal policy and maintain price stability.⁷ In a monetary union, not even adherence to sound fiscal practices can protect a country from price or output fluctuations generated by the worsening budget position of another country. What matters is the overall state of public finances of all countries. In principle, the fiscally responsible country could still insulate itself by varying its own budget surplus to compensate for the budget variations of the other country, keeping their combined public debt on a steady path. This amounts to financing the less financially disciplined country's budget deficits, something few governments would be eager to do.

In the EMU's institutional framework, fiscal policy is decentralized, remaining the responsibility of the national governments though formally limited by the Stability and Growth Pact (SGP) of 1996. After the exchange rate convergence criterion was loosened in 1993, the SGP aimed to strengthen the soundness of public finances by making permanent the Maastricht convergence criteria of a 3 percent deficit-to-GDP ratio and a 60 percent debt-to-GDP ratio. It also established an enforcement mechanism, the excessive deficit procedure, which relies on surveillance and possible sanctions. The SGP was revised in 2005, becoming more tolerant of deficits arising from cyclical downturns and allowing more country autonomy.

David Mayes, adjunct professor and director of the Europe Institute at the University of Auckland, noted that before the 2008–09 global recession,

there was impressive progress in terms of deficit reduction. He argued that the current stress in most member states suggests that the consolidation was cyclical rather than structural—especially for the peripheral euro area countries. In early 2010, Greece struggled paying its sovereign debt, and by the end of the year, Ireland had difficulty meeting its obligations. Spain, Portugal and Italy also sustained diminished investor confidence and consequent higher borrowing costs as concern over their public finances mounted (*Chart 2*).

Absent a centralized, redistributive fiscal policy, the EU adopted an ad hoc strategy of providing emergency credit lines through the European Financial Stability Facility and the European Financial Stabilization Mechanism to curb the spread of financial woes to other member states. The IMF also provided emergency funds and technical assistance. A growing number of European countries are installing austerity measures aimed at returning to the bounds of the SGP, especially regarding the deficit. Conference participants suggested that the EMU's unique framework

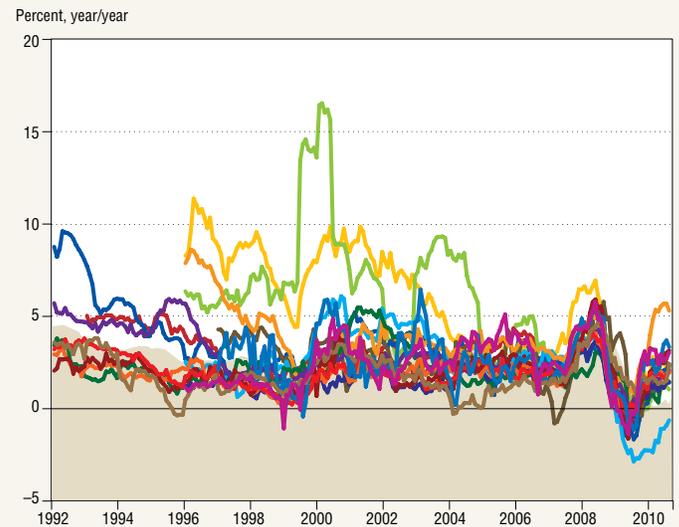


Garry Schinasi from Bruegel and Edwin Truman from the Peterson Institute for International Economics in Washington.

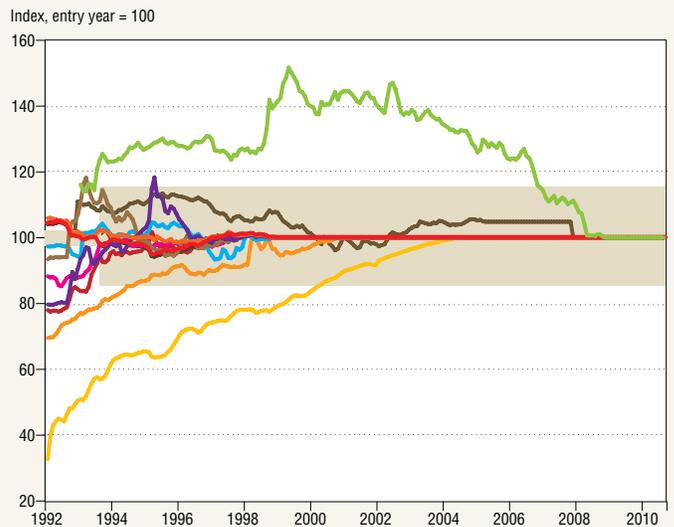
The Maastricht convergence criteria are **A. price stability** (not more than 1.5 percentage points above the unweighted arithmetic average of the three best-performing member states, computed based on the latest available 12-month average of each country's harmonized consumer price index over the previous 12-month average); **B. exchange rate stability** (participation in the exchange rate mechanism, ERM, for two years without severe tensions); **C. long-term interest rate convergence** (not more than 2 percentage points above the unweighted arithmetic average of the three best-performing member states in terms of price stability based on the latest available 12-month average for each); **D. sound public finances** (with reference value of no more than 3 percent for the general government overall deficit over GDP); and **E. sustainable public finances** (with reference value of no more than 60 percent for the general government debt over GDP).

Chart 1
Convergence Criteria of the Economic and Monetary Union

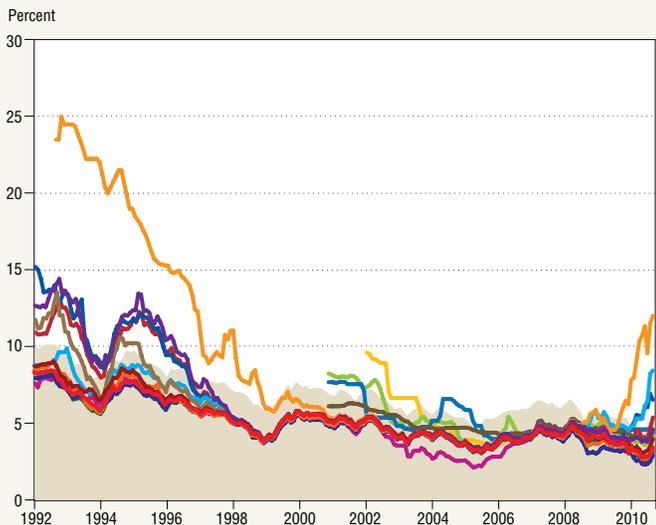
A. Price Stability
(Inflation rates)



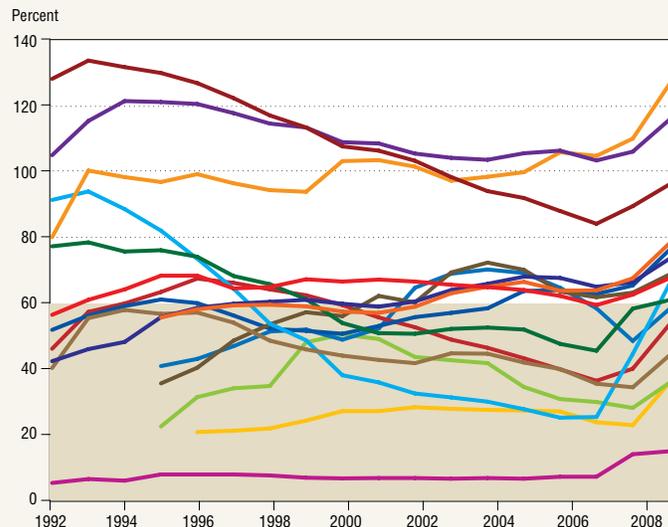
B. Exchange Rate Stability



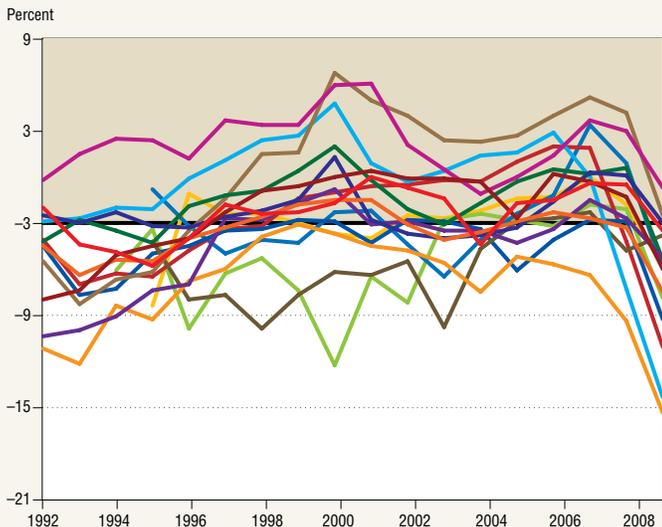
**C. Interest Rate Convergence
(Long-term rates)**



**E. Sustainable Public Finances
(Government debt as a share of GDP)**



**D. Sound Public Finances
(Government budget balance as a share of GDP)**

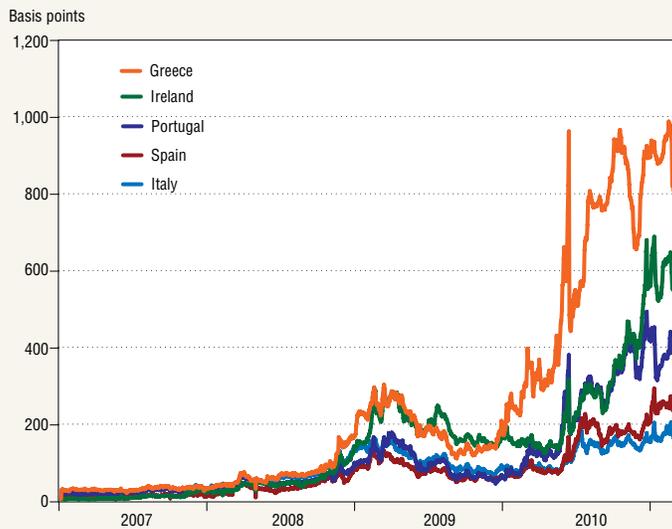


- Austria
- Belgium
- Cyprus
- Finland
- France
- Germany
- Greece
- Ireland
- Italy
- Luxembourg
- Malta
- Netherlands
- Portugal
- Slovakia
- Slovenia
- Spain

NOTES: Shaded areas represent stipulations set by the Maastricht convergence criteria. The charts plot the data for the 16 euro-area countries. Reference values for inflation and interest rates are based on data for all 27 European Union (EU) member states since each joined the EU. The exchange rate bands correspond to the wider margins of +/-15 percent adopted for the Exchange Rate Mechanism (ERM) since August 1993 and to the prevailing margins of +/-2.25 percent prior to that. Belgium and Luxembourg formed a monetary union in 1921 that survived until the adoption of the euro in 1999. Since 1944, one Luxembourgish franc was equal to one Belgian franc, so only the Belgian franc exchange rate is plotted. All exchange rates are quoted as national currencies per ECU (European currency unit).

SOURCES: Statistical Office of the European Communities (Eurostat); Haver Analytics.

Chart 2
Spreads on Sovereign Yields Widen as Fiscal Difficulties in Peripheral Euro Area Countries Are Uncovered



NOTE: The chart shows the difference, or spread, in interest rates between 10-year government bonds for various countries and German 10-year government bonds.

SOURCES: Reuters; Haver Analytics.

of centralized monetary policy and decentralized fiscal policy was flawed because it didn't allow interregional solidarity within the EU.

Kenen (1969) argued that a more centralized, redistributive fiscal policy can be used to compensate for the costs and to sustain a currency area even when factors of production such as labor are not perfectly mobile. As Chopra noted, facilitating interregional transfers to respond to asymmetric shocks requires the EU to open the debate on partially centralizing fiscal policy. However, European integration has traditionally followed the principle of subsidiarity that matters ought to be handled by the competent authority closest to the affected citizens. It remains to be seen whether the sovereign debt crisis in Greece and Ireland will change how the principle of subsidiarity is applied to fiscal matters and result in any significant transfer of fiscal resources to the EU, conference participants said.

The Benefits of Monetary Union

In a 1990 report, "One Market, One Money," the European Commission noted that intra-EEC trade is largely also intra-industry trade in which countries buy and sell the same types of goods—Italy sells Fiat cars in Germany, and Germany Volkswagen cars in Italy. Trade integration means that most sector (supply-side) shocks affect all countries similarly and also reduces the likelihood of asymmetric demand shifts about which Mundell (1961) worried (*see Box 1*). The adoption of a common currency would simply reinforce those tendencies, lowering the costs of maintaining a currency area. Kenen (1969) also argued that countries with a more diversified productive structure were less subject to industry-specific demand shocks and, therefore, more likely to constitute an optimal currency area.

In turn, Paul Krugman (1991) argued that deeper trade integration, particularly in the presence of economies of scale and synergies, leads to regional concentration of industrial activities and specialization. Proximity to the final consumer is weighed against the economies of scale through production centralization to determine optimal location patterns. Trade integration may result in greater country specialization, increasing the exposure to asymmetric shocks and making it costlier to form a currency area and adopt a common currency. McKinnon (1963) and Alberto Alesina and Robert J. Barro (2002) argued that small and highly open economies may achieve greater trade benefits by forming a currency area with their largest trading partners. The debate remains open as to how much heightened trade integration prior to monetary union may have facilitated the introduction of the euro and which countries benefited most.

The benefits of adopting a common monetary standard are also predicated partly on the notion that reducing exchange rate risk/uncertainty and increasing price transparency encourage competition, trade and investment. Intra-area exchange

rate risk/uncertainty can only be completely eliminated with full monetary union. To illustrate the euro's benefits, **Antonio de Lecea**, a member of the EU delegation in Washington, said that if all 50 U.S. states maintained their own currencies, then conversion costs and exchange-rate volatility would severely constrain internal trade and investment in the U.S. While the effect of the euro on trade is difficult to isolate, de Lecea said that intra-euro-area trade creation may range from 5 percent to 15 percent without apparent trade diversion from non-euro-area countries. Nonetheless, some of these benefits may not be shared equally, just as costs aren't, given that some countries trade more intensely than others and their size and other characteristics differ.

Other potential advantages may come through the "internationalization" of the euro, a status envisioned by Marjolin in 1962, which may have been out of reach for any individual European currency independently or as part of a credible fixed exchange rate regime.⁸ The international role of a currency emerges through increasing issuance of international debt securities, cross-border loans and cross-border deposits; encouraging foreign exchange trading; augmenting settlements and invoicing of international trade; and serving as official reserve currency and anchor for other countries. As conference participants noted, the dollar still dominates along all of these dimensions, with the euro and yen distantly behind.

Georges Pineau, ECB representative in Washington and observer at the IMF, said the euro has emerged as the world's second international reserve currency behind the dollar. Nonetheless, he was seconded by de Lecea in proclaiming that the position of the European institutions is neutrality on the international role of the euro. **Edwin Truman**, senior fellow of the Peterson Institute and former head of the Federal Reserve's Division of International Finance, noted that the global share of disclosed reserves denominated in euros rose to slightly less than 28 percent in 2009 from

18 percent in 1999, at the expense of the yen and to a lesser degree of the dollar. He estimated that 15 percent of total international dollar-denominated assets consist of foreign exchange reserves and argued that the same is probably true of the euro. Hence, in his view it would be a mistake to identify the international financial system with the international monetary system.

Euro-denominated international debt securities reached 32 percent in 2009 from 19 percent in 1999, while the proportion of all cross-border loans in euros lagged, though inching higher from 12 percent in 1999 to 17 percent in 2009, Pineau said. The euro's role as a trade invoicing or settlement currency has grown somewhat from 18 percent in 2001 to 29 percent in 2007, while the euro's share in foreign exchange trading (by Continuous Linked Settlement System data) remained relatively steady between 2002 and mid-2008, Pineau added. The dollar's position has declined somewhat by these measures since the introduction of the euro, but remains well ahead. The euro has only become dominant within its natural area



Conference attendees at "The Euro and the Dollar in the Crisis and Beyond" conference held at the Federal Reserve Bank of Dallas on March 17, 2010.

of influence, those countries in close proximity and with deep trade ties to the euro area.

The euro enjoys special popularity among central and eastern European countries where it is widely used for invoicing of international trade and issuance of debt securities, both Darvas and Pineau said. In Asian markets, the dollar predominates as a reserve currency and for trade invoicing, leaving the euro with a relatively low profile, said **Randall Henning**, a visiting fellow at the Peterson Institute. The diminished use of the dollar among Latin American countries follows unexpected weak economic performance of dollarized countries and the collapse of Argentina's currency board in 2002, Zarazaga said. The euro, however, has not benefited from this retreat, maintaining a marginal presence.

Concluding Remarks

Countries in a monetary union may, over time, turn their union into an optimal currency area, even if it wasn't one before, through the benefits of a shared currency, as Jeffrey A. Frankel and Andrew K. Rose (1998) and Paul De Grauwe and Francesco Paolo Mongelli (2005) argued. On balance, conference participants agreed the euro's first 10 years have proven a positive development, though the 2008–09 global recession refocused concerns about the euro's role, its costs and, ultimately, whether it constitutes an optimal currency area.

The recession also brought to the fore questions about the proper role of fiscal policy and the financial system in the context of a monetary union. Good policies and strong institutions and regulations matter, participants concluded. Posen of the Peterson Institute pointed to the debt crisis in the peripheral euro-area countries as evidence that common monetary policy is necessary but not sufficient to realize the full benefits of monetary union. Sound public finances are also required.

What became apparent with the spread of

the crisis is that countries are now more interconnected than before. Increasingly, nations have a vested interest in the quality of economic and financial policies elsewhere. Coordinated policy responses among industrialized countries send a strong signal of collaboration in addressing global economic challenges. The European experience also shows the limits of recourse to nonbinding policy coordination and other weakly enforceable commitments. Ten years into one of the most ambitious monetary undertakings in recent history, the same questions that punctuated the euro's birth remain and will likely continue generating debate. It is a work in progress whose evolution we may well revisit a decade from now in Dallas.

—**Enrique Martínez-García and Janet Koech**

Papers, presentations and video from the conference, "The Euro and the Dollar in the Crisis and Beyond," are available on the Federal Reserve Bank of Dallas website, at www.dallasfed.org/institute/events/10euro.cfm.

Notes

The authors thank Jason Saving and Mark Wynne for their comments.

¹The U.S.'s early commitment to redeem dollars for gold at the fixed rate of \$35 per ounce contributed to the dollar becoming the de facto anchor of the system and the predominant international reserve currency.

²At the urging of the U.K., the European Free Trade Association (EFTA), comprising most non-EEC countries in western Europe, was established in 1960. A free-trade agreement allows removal of trade barriers among members, while a customs union also requires uniform external tariffs—a common trade policy. Both are permitted regionally under Article XXIV of the GATT.

³"Memorandum of the Commission on the Action Programme of the Community for the Second Stage," Chapter VIII (Monetary Policy), Brussels, Oct. 24, 1962.

⁴The nominal exchange rate is the relative price of one currency in units of another. Hence, with "n" national currencies, there are always "n-1" exchange rates and the anchor currency to which they are pegged. In principle, a basket of currencies may also serve as anchor, though the lack of backing by a single monetary policy may be detrimental to its viability.

⁵ The London Gold Pool was established in 1961 with reserves from the U.S. and seven other western European countries to defend in the London gold market the \$35 per ounce dollar–gold parity established under Bretton Woods. After the Gold Pool’s collapse in 1968, a two-tier system of official and open market transactions was maintained until the U.S. unilaterally suspended direct convertibility of the dollar to gold in 1971.

⁶ The European Communities (ECSC, EEC and EAEC) shared the EEC executive and administrative bodies after the Merger Treaty of 1965 took effect in 1967. The EEC, re-named European Community (EC), along with the ECSC and EAEC, became the first pillar of the European Union (EU) established in the Maastricht Treaty signed in 1992. The ECSC expired in 2002, the EAEC remains a distinct entity, while the legal personality of the EC was subsumed into the EU with the Treaty of Lisbon in 2009. There have been successive enlargements to the European Communities/EU since the Hague Summit of 1969: 1973—Denmark, Ireland and the U.K.; 1981—Greece; 1986—Spain and Portugal; 1990—East Germany (German unification); 1995—Austria, Finland and Sweden; 2004—Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia; 2007—Bulgaria and Romania.

⁷ Michael Woodford (1996) maintained that this is particularly true if changes in the path of the government budget and debt have a discernible effect on aggregate demand (that is, if Ricardian equivalence fails).

⁸ Eleven European Union (EU) member states adopted the euro in 1999: Austria, Belgium, Netherlands, Finland, France, Germany, Ireland, Italy, Luxembourg, Portugal and Spain. Other EU countries have joined the euro since then: Greece (2001), Slovenia (2007), Cyprus (2008), Malta (2008), Slovakia (2009) and Estonia (2011).

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Africa—Missing Globalization's Rewards?

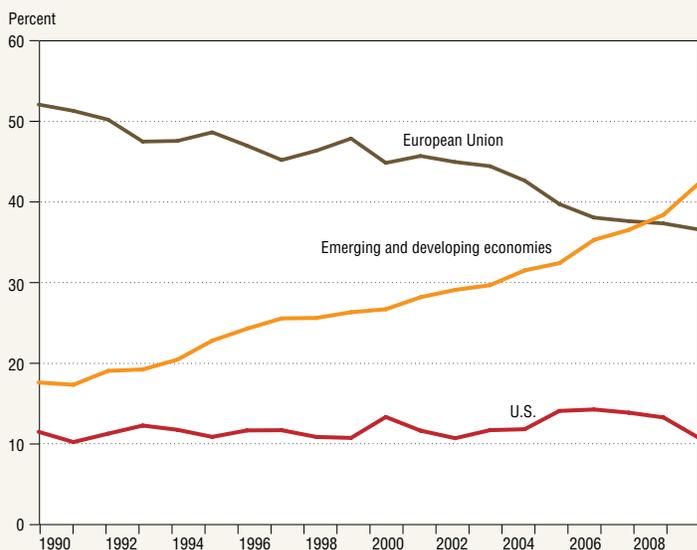
Globalization increases integration of world economies through trade, financial ties, information exchange, technology and the movement of people. The rising importance of world trade and capital flows reflects enhanced economic and financial linkages. Nations with superior access to world markets can more fully exploit their competitive advantages, opening their economies to international competition. With greater capital flows and freedom of capital movement, resources more effectively move to their most productive locations, contributing to rising living standards.

The African continent's economies have increasingly opened themselves to world trade, attracting foreign investment and adopting improved transportation and communication technologies. Still, growth has lagged behind other developing

regions, and the continent remains relatively less integrated into the global economy. Africa's nations, by strengthening macroeconomic policies and pursuing structural reforms, can take fuller advantage of globalization and reduce the risks of marginalization.

This article evaluates the current and future direction of globalization in Africa and explores how the continent can improve its growth prospects and meet the United Nations' Millennium Development Goals by the 2015 target date.¹ Behind the continent's aggregate numbers reside its countries' varied experiences. Regional or country data are applied wherever available to illustrate intra-Africa divergence and to account for varying nation size. The continent's experience over the past two decades suggests that globalization is a necessary, though not sufficient, condition for growth and development.

Chart 1
Africa Increases Trade With Emerging and Developing Market Economies



NOTES: Trade is the sum of imports and exports. Data are in nominal terms, and the shares are the total of each region's imports and exports in Africa's total trade.

SOURCES: International Monetary Fund's Direction of Trade database; Haver Analytics.

African Trade—Avenue to Globalization

Before the 2008–09 global recession, the continent experienced one of its longest and most geographically widespread growth spurts; real gross domestic product (GDP) expanded at an average annual rate of 5.5 percent from 2000 to 2007, and real GDP per capita, a measure of the standard of living, grew an average 3.1 percent during the period. The performance was partly supported by increased trade. Africa's total merchandise trade (exports and imports combined) increased to more than \$1.04 trillion in 2008 from \$211 billion in 1990, before declining to \$798 billion in 2009 amid the global slowdown. The continent's share of world trade grew modestly to 3.2 percent in 2008 from 2.7 percent in 1990, dipping slightly to 3 percent in 2009. The uptick (before the worldwide economic slump) was mainly driven by demand from rapidly growing developing countries, such as China, Brazil and India, and by rising oil and commodity prices.

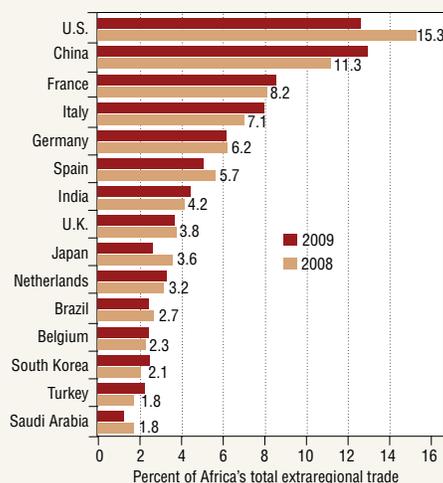
However, the upsurge is confined to a handful of nations, and although total merchandise trade has increased across the continent, Africa's overall contribution to world trade (3 percent in 2009 and 3.2 percent in 2008) remains small and below that of other developing regions. By comparison, developing Asia accounted for 29 percent of global trade in 2009, up from 27 percent in 2008, while Latin America and the Caribbean contributed about 6 percent in both 2009 and 2008.² To gauge how much the regions trade relative to their economic sizes, it's helpful to view each economy's share of global GDP. In 2009, developing Asia accounted for 19 percent of world GDP, Latin America and the Caribbean, 7 percent, and Africa, 3 percent. With this comparison, Africa and Latin America trade with about the same level of intensity.

Africa still depends on the developed economies for trade, but recent expansion has increasingly involved exchanges with emerging countries. Such "South-South" cooperation is growing, and Africa has deepening linkages—through trade and financial flows—with economies such as China and India. Data before the slump indicate that total merchandise trade with other developing countries increased to \$305 billion in 2008, from \$21 billion in 1990, while with developed countries it rose to \$619 billion, from \$144 billion. Similarly, intra-African trade advanced to \$115 billion in 2008, from \$37 billion in 1995. Other (non-African) developing countries' share of Africa's total trade reached 38.3 percent in 2008, from 17.5 percent in 1990.

The continent's overall trade declined in 2009. Still, developed countries remain the region's largest trading partners even as their relative share of Africa's trade trended downward over the past 20 years. The European Union, for example, is Africa's main trade partner; however, its share diminished to less than 40 percent in 2008 from about 52 percent

Chart 2

U.S. and China Lead Africa's Trading Partner List



NOTE: Countries are ranked by their 2008 trade shares.

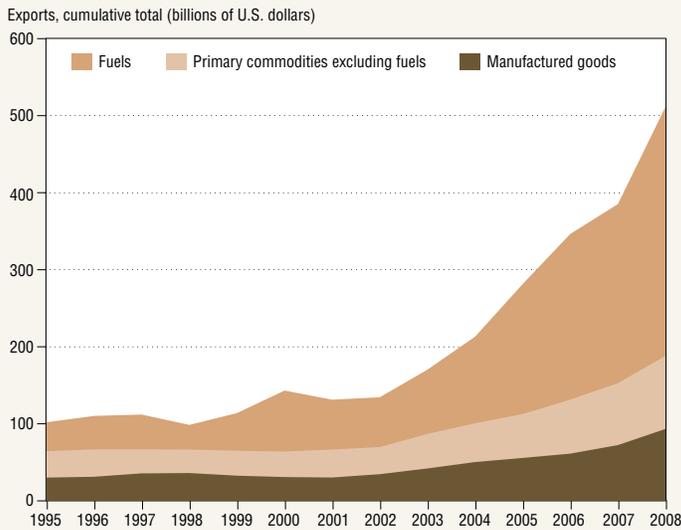
SOURCE: United Nations Conference on Trade and Development.

in the early 1990s (UNCTAD 2010) (*Chart 1*).

Developing Asia is increasingly important to the commercial dynamics of Africa. Its share of the continent's trade has steadily increased, from an average 14 percent from 1995 to 2000 to 20 percent between 2000 and 2008 and 28 percent in 2009. Total trade between these two regions, in nominal terms, jumped nearly tenfold from 2000 to 2008. China has taken the lead among countries, moving to the top spot in 2009, as trade with advanced economies fell more relative to other developing nations. China (which trailed only the United States in total trade in 2008) has also become the region's largest source of imports. Other countries, including Brazil, Saudi Arabia and Turkey, also boosted ties with Africa and were among the continent's top trading partners in 2008 and 2009 (*Chart 2*).

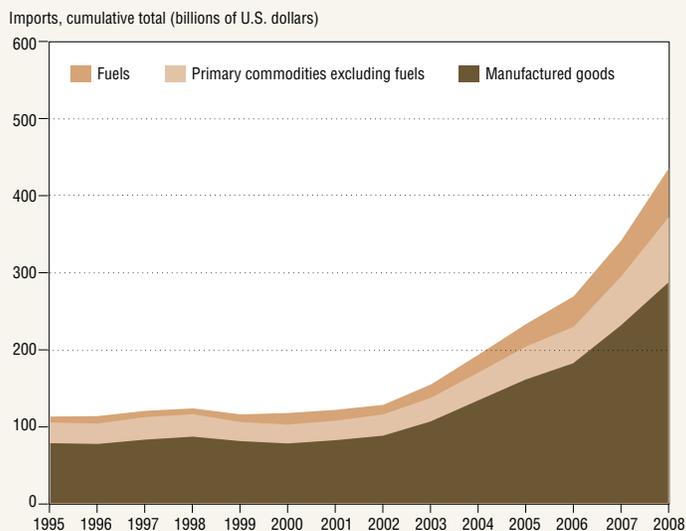
Commodities dominate Africa's foreign trade. Since 2002, primary exports increased significantly,

Chart 3
Fuels and Other Primary Commodities Dominate Africa's Exports



SOURCE: United Nations Conference on Trade and Development.

Chart 4
Africa's Imports Depend on Manufactured Goods



SOURCE: United Nations Conference on Trade and Development.

while manufactured goods rose by a lesser amount (*Chart 3*). In 2008, primary products accounted for 82 percent of Africa's exports, up from 70 percent in 1995. Fuels make up a large proportion of primary commodity exports, amid new demand from China, India, Brazil and other rapidly growing economies.

Among imports, manufactured products predominated, accounting for about 67 percent of the total amount from 1995 to 2008 (*Chart 4*). The significant increase in imports and exports after 2002 coincides with China's accession to the World Trade Organization, which lowered trade barriers and improved market access and capital flows.

Even as the continent remained commodity-dependent, it fell behind in exports of nonfuel primary commodities. The region also hasn't diversified into more high-value-added products such as manufactured goods. Primary commodities' production structures are poorly linked to the broader economy, generating fewer benefits than might otherwise be expected, according to a study by Sachs and Warner (1995). The continent's poor economic performance, or missed opportunity over the past two decades, reflects in part an inability to move beyond dependence on primary commodities for export earnings.

Additionally, world prices for the commodities Africa sells tend to be more volatile and out of producers' control than those for manufactured items. Moreover, studies show that manufactured goods have fairly high income elasticities of demand and tend to offer better growth prospects (Lall 2000). Across the continent, structural factors such as poor infrastructure, a high cost of doing business, limited investment in human capital and educational attainment, an unsettled political climate as well as an inability to take advantage of economies of scale are among constraints hindering development of a manufacturing sector and limiting growth. Thus, Africa's dependence on mostly unprocessed primary products has cost it the benefits it could have realized if it had attained the same level of industrialization as other developing economies.

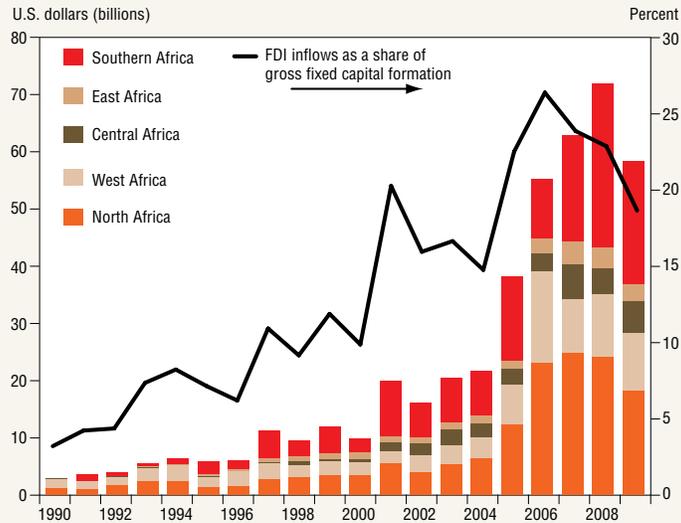
Financial Integration—Linking Through Capital Flows

Africa's trade increase was accompanied by a rise in foreign direct investment (FDI). Such inflows reached \$72 billion in 2008, up from about \$3 billion in 1990, before declining to \$59 billion in 2009 amid recession-related commodity price declines (*Chart 5*). A key component of FDI is reinvested earnings; since FDI is mostly directed to the primary sector, which includes such activities as agriculture, forestry, mining, quarrying and oil extraction, falling commodity prices reduce profits and curtail FDI.

The significance of FDI to African economies—as measured by the ratio of FDI to the region's gross fixed capital formation—peaked at 27 percent in 2006, slipping to 19 percent in 2009. Since 2000, FDI inflows have accounted for about 20 percent of gross fixed capital formation. A decrease may affect the region's investment prospects and impact much-needed infrastructure expenditures. The extent of the FDI drop in 2009 varied across subregions.³ East Africa declined 23 percent relative to 2008, while West Africa fell 10 percent. Flows to North Africa decreased by 24 percent, despite its more diversified FDI and sustained privatization programs that attracted foreign investment. The southern region, the continent's largest recipient of FDI, fell 25 percent. FDI rose only in Central Africa, up 30 percent, mostly due to large investments in Equatorial Guinea.⁴

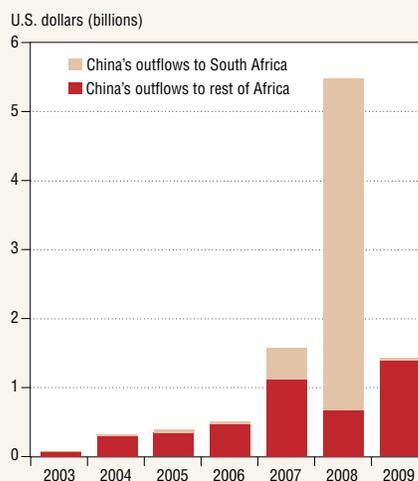
Before the recent downturn, FDI surged to record highs. Developing countries' investment in Africa is among the factors behind this upward trend. These nations increasingly compete for investment opportunities with developed countries that traditionally provided the bulk of capital. Asian developing countries in particular account for the largest share of South–South FDI flows. China has become an important investor in the continent, although the bulk of its investments have been regionally focused (*Chart 6*). In 2008, 87 percent of total Chinese outlays to the region went to South Africa, mostly for acquisition of part ownership of Standard and

Chart 5
Foreign Direct Investment Inflows Vary Across Subregions



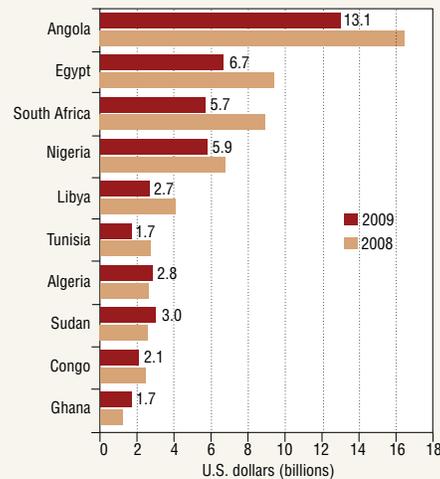
SOURCE: United Nations Conference on Trade and Development.

Chart 6
China's 2008 Investment Concentrated in South Africa



SOURCE: 2009 Statistical Bulletin of China's Foreign Direct Investment, Ministry of Commerce of People's Republic of China and National Bureau of Statistics.

Chart 7
Top 10 Recipients of FDI Account for
Three-Quarters of Total Inflows in 2009



NOTE: Countries are ranked according to the magnitude of their 2008 FDI inflows.

SOURCE: United Nations Conference on Trade and Development.

Chartered Bank by the government-owned Industrial and Commercial Bank of China (ICBC). Other investments have gone into resource extraction, construction and manufacturing. Capital is drawn to securing natural resources, gaining direct access to local markets and capitalizing on the favorable investment climate in some areas.

Other rapidly expanding economies—India, Malaysia, Turkey and Brazil—also increased investment in African natural resources. As a result, the region’s largest natural resource producers—Angola, Libya, Nigeria and South Africa—consistently are among top FDI recipients (*Chart 7*).

African governments have become increasingly committed to policies intended to attract stable FDI and boost capital inflows. The United Nations Conference on Trade and Development’s (UNCTAD) annual survey of changes to national laws and regulations shows that in 2006, 40 African countries introduced 57 measures affecting FDI, 49 of them designed to encourage investment

(World Investment Report 2007). They initiated measures allowing foreign investors easier access and tax reductions to promote capital inflows. For example, Kenya strengthened its investment promotion agency, while Nigeria cut the average property registration time to 80 days from 274. Ethiopia set up an advisory council for investment promotion, and Egypt, Algeria, Tanzania and Uganda were among nations establishing special investment zones.

Conversely, some governments adopted less-favorable policies. Zambia introduced a tax regime in 2008 that boosted mining industry tax rates to 47 percent from 31.7 percent. Algeria and Egypt also raised investment-related taxes.

FDI returned to regions where political stability returned. Flows to Angola increased significantly following the end of violent conflict. With rich petroleum and diamond endowments, Angola is a top FDI recipient, ranking first in the continent in both 2008 and 2009 (*Chart 7*).

Africa holds 10 percent of the world’s proven oil reserves, more than 80 percent of diamond holdings and a significant share of platinum and uranium stocks. South Africa alone has about 40 percent of the world’s gold (UNCTAD 2009). Not surprisingly, most FDI has traditionally been concentrated in the primary sectors. However, the composition of FDI has changed in recent years. Collapsing commodity prices and diminished international financial resources during the recession cut funding directed toward primary goods. The service sector, led by the telecommunications industry, became the dominant FDI recipient. It attracted the largest share of cross-border mergers and acquisitions, with transactions such as Vodafone Group’s \$2.4 billion purchase of VenFin Ltd. in April 2006 in South Africa and India’s Bharti Airtel acquisition of Kuwait’s Zain’s mobile phone networks in 15 African countries for \$10.7 billion (World Investment Report 2010).

Even with recent investment, Africa’s FDI growth did not keep pace with other regions. While

African investment rose 30 percent from 2006 to 2008, funding in Latin America and the Caribbean grew 94 percent (*Chart 8A*). Investment in all areas fell in 2009 amid the global slowdown. When accounting for regional sizes by using FDI per capita, investment in West Asia and Latin America and the Caribbean significantly exceeded the rest of the developing economies (*Chart 8B*). Africa still receives the least investment of its peers.

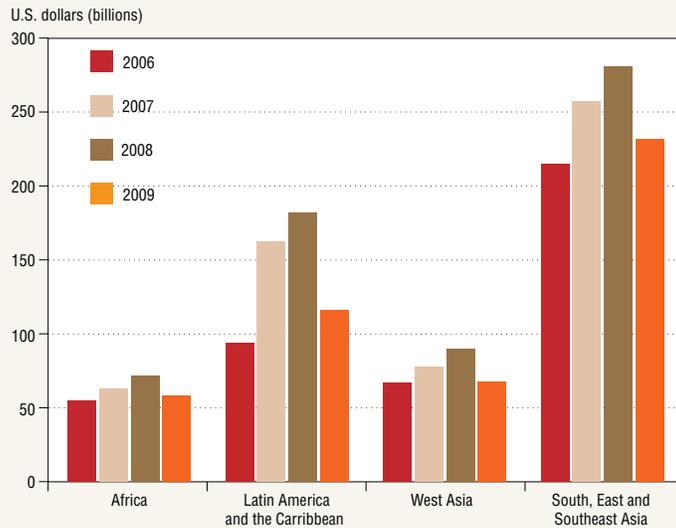
To put the investment totals in perspective, Africa's current share of global FDI remains lower than it was 40 years ago, when it peaked at 9.5 percent in 1970 (*Chart 9*). It trended downward until 2000, when it reached a recent-term low. In 2008, it stood at 4 percent, edging up to 5.3 percent in 2009, mainly because total FDI flows fell more worldwide than they did in Africa (a 37 percent drop globally compared with a 19 percent decline for Africa). Africa's modest share and its mostly declining piece of global FDI and exports over the past two decades partly reflect slow progress in developing a diverse production base and in creating larger regional markets. FDI is important for development because, besides serving as a capital source, it stimulates employment and productivity, promotes the transfer of technology and enhances economic growth. Studies have found that countries that are open to trade will attract more FDI; thus, countries wishing to boost investment should also increase trade (Asiedu 2004).

Africa's Development Lags

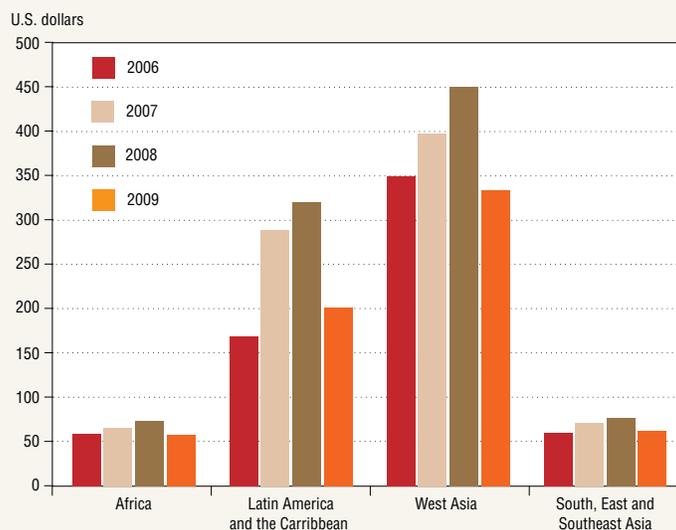
An International Monetary Fund statement on globalization's benefits cites "substantial evidence, from countries of different sizes and different regions, that as countries 'globalize,' their citizens benefit in the form of access to a wider variety of goods and services, lower prices, more and better-paying jobs, improved health and higher overall living standards" (IMF 2008). However, the trade and investment linkages in Africa have remained relatively unchanged since the 1990s even as globalization and economic

Chart 8
Africa's FDI Levels Remain Low

A. Total FDI Inflows

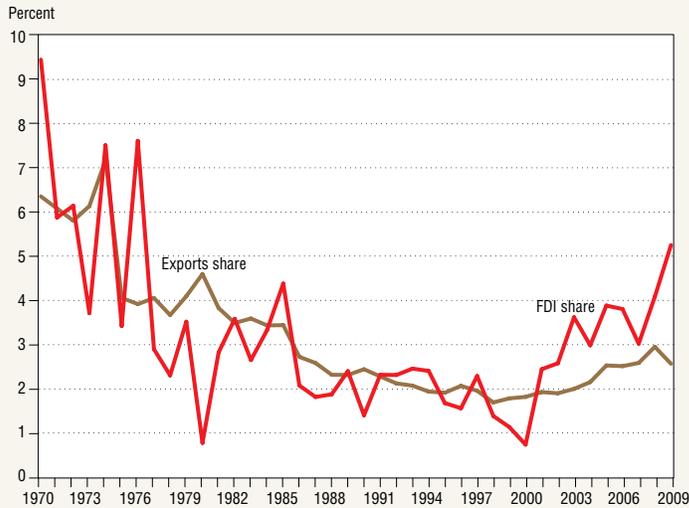


B. FDI Per Capita



SOURCE: United Nations Conference on Trade and Development.

Chart 9
Africa's FDI and Exports Share of World Totals



SOURCES: United Nations Conference on Trade and Development; International Monetary Fund.

integration strengthened worldwide. Moreover, living standards have not noticeably progressed toward those of more advanced economies, nor has development accelerated. Per capita GDP—a rough estimate of average living standards—was little changed between 1990 and 2008, while other developing countries experienced significant improvement (*Chart 10*).

Over the past two decades, trade and FDI flows between Africa and the rest of the world have increased tenfold. However, among developing regions, these gains are relatively small, and more needs to be done to further integrate into the global economy and obtain globalization's benefits.

The neoclassical theory of growth suggests that initially laggard economies subsequently grow faster in per capita terms, catching up to those that started out ahead. According to the neoclassical model, poorer countries with lower capital-to-labor ratios will grow more rapidly than richer countries with higher capital-to-labor ratios. Con-

vergence is expected because of a higher potential return on capital arising from capital scarcity and lower levels of capital per worker. That, in turn, accelerates capital accumulation and growth. Additionally, poorer countries would be expected to grow faster than rich ones as technological know-how flows from advanced nations to the laggards (Barro and Sala-i-Martin 1995).

Such theory not only provides a framework to think about African development, but also supplies insight into how different countries have fared given similar initial economic and developmental endowments. Ghana and Malaysia were analyzed as proxies for the performance of African nations relative to non-African developing countries in a study that attempted to control for institutional factors and differences in initial conditions (Asare and Wong 2004). Both nations are former British Empire colonies and attained independence in 1957. Each also began with a rich mix of resources, significant gold and foreign currency reserves, strong British legal and political institutions and similar educational systems. Malaysia had a per capita gross national product (GNP) of about \$200 while Ghana's was \$170 in 1958. The two countries have since followed very different paths. In 2000, Malaysia's per capita GNP was \$3,884—about 14 times that of Ghana, at \$285. Ghana has remained largely agricultural, with that sector accounting for about 36 percent of gross domestic output. Malaysia has become highly industrialized, with agriculture contributing only 14 percent to its gross domestic output.

Several factors may account for the countries' divergence, including the extent to which they diversified their economies, their political environments and the level of investment and commitment to develop human capital through education. While the neoclassical framework cannot explain this result, it helps provide reasons for the differences. Less-developed countries with low capital-to-labor ratios should have higher marginal returns on capital and foreign investment. That Africa, as

a continent, has been unable to attract more FDI relative to other regions is symptomatic of deeper structural problems inhibiting the continent's economies from fully recognizing investment opportunities. Policy incentives and structural factors may have prevented not only the realization of higher returns on capital, but also reallocation of resources to sectors such as manufacturing at the same speed as in other developing areas.

Many emerging countries have not caught up to the per capita income levels of developed nations. Some diverged over time, as in the case of Ghana and Malaysia. Nations that pursued policies to incentivize investment, including some in Asia and Latin America, have grown rapidly and are moving toward industrial countries' standard of living. Moreover, nations that sought policies that facilitated (rather than impeded) reallocation of resources toward manufacturing, as well as favoring structural reforms, benefited more from greater access to world markets and subsequently grew faster. Africa's convergence process has mostly stalled except for isolated successes, such as Mauritius and Botswana. The divergence of Ghana and Malaysia, despite their similarity at the time of independence, lends support to the view that transparent and stable policies are needed for sustained economic success and global financial integration. Periods of political upheaval in Ghana during the past decade and its failure to diversify its economic structure and shift from mostly primary commodity exports to more value-added ones partly explain its performance. On the other hand, Malaysia is realizing benefits from globalization because it avoided the problems that hampered Ghana.

Globalization—A Necessary but Insufficient Condition for Development

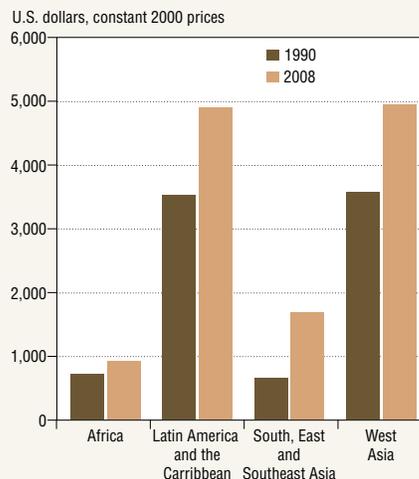
Globalization creates new opportunities to access wider markets for trade, allocate capital inflows more effectively and improve the diffusion

of technology. The developing world is becoming more integrated, though the pace varies across countries and regions. Globalization's impact on growth and poverty reduction has been unbalanced, even marginal in some areas. Economic openness alone is insufficient to sustain growth. Countries seeking to take full advantage of globalization must install sound macroeconomic policies in addition to stable regulatory and incentive frameworks and good governance.

In Africa, obstacles to stronger globalization and growth include inadequate infrastructure, substandard governance and a lack of policies to enhance outward-oriented trade and capital flows. A stable macroeconomic environment—characterized by low and predictable inflation, sustainable fiscal policies as well as relatively stable real exchange rates—is a prerequisite for high rates of investment and growth. Macroeconomic instability increases uncertainty, discouraging financial commitment.

Conversely, boosting growth in developing countries is a necessary condition for attainment of the U.N.'s 2015 Millennium Development Goals.

Chart 10
Africa's Real Per Capita GDP Ranks Comparatively Low



SOURCE: United Nations Conference on Trade and Development.

These objectives include eradication of extreme poverty and hunger, achievement of universal primary school education, improvement of overall health conditions and establishment of global partnerships to foster development. According to the U.N., robust growth in the first half of the past decade reduced the number of people living on less than \$1.25 a day in developing regions to 1.4 billion in 2005 from 1.8 billion in 1990, while the poverty rate dropped to 27 percent from 46 percent. However, with exports, commodity prices and investment all declining during the economic crisis, growth slowed, which complicated goal attainment (U.N. 2010). To overcome the slowdown and to continue toward the targets, all regions, including Africa, must redouble efforts to ensure that they harness globalization's benefits.

Conclusion

The growing share of developing countries' trade with Africa has reduced Africa's relative dealings with developed nations. However, the continent still trades most with the developed economies. Trade in the region is geographically concentrated and reinforces commodity dependence, as primary products make up most exports, while manufactured goods are an increasingly large part of imports. This trade pattern—as well as weak infrastructure and inadequate policy reforms—has contributed to anemic economic performance. At current levels of trade, the continent remains far from achieving the growth rates deemed necessary to meet the U.N.'s development goals and improve the living standards for most of its population.

FDI remains concentrated in the primary sectors, although services have gained visibility. South–South capital flows have increased, with economies such as China, Brazil and India providing new investment. Some economies have opened to external trade and capital flows, but the continent remains in relative isolation compared with most other developing and emerging

economies. Africa's performance over the past two decades indicates that despite globalization's importance for growth through increased trade and FDI, there must be more sound macroeconomic policies and structural reforms that promote investment, capital accumulation and economic integration to ensure sustainable growth. Without such measures, the continent can't take full advantage of greater economic openness.

—Janet Koech

Notes

¹ The Millennium Development Goals are eight international benchmarks that United Nations member states agreed to achieve by 2015.

² Economies classified by UNCTAD as “developing Asia” include four regions: West Asia, East Asia, South Asia and Southeast Asia. Individual groupings are as follows: West Asia: Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestinian Territory, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates, Yemen. East Asia: China, Hong Kong, Macao (China), Mongolia, North Korea, South Korea, Taiwan. South Asia: Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, Sri Lanka. Southeast Asia: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, Vietnam.

³ African country groupings are as follows: Southern Africa: Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe. East Africa: Comoros, Djibouti, Eritria, Ethiopia, Kenya, Madagascar, Mauritius, Seychelles, Somalia, Uganda, Tanzania. Central Africa: Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, Rwanda, Sao Tome and Principe. West Africa: Benin, Burkina Faso, Cape Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Saint Helena, Senegal, Sierra Leone, Togo. North Africa: Algeria, Egypt, Libya, Morocco, Sudan, Tunisia.

⁴ Commercial oil and gas reserves are the major attraction of FDI to Equatorial Guinea. The country also has substantial deposits of minerals, including gold, diamonds, bauxite, iron ore, titanium, copper, manganese and uranium. The U.S. is the largest foreign investor in Equatorial Guinea.

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Shipping Indexes Signal Global Economic Trends

International trade is the centerpiece of the global economy; the United States increasingly turns to foreign suppliers for many consumer goods it once produced domestically. Yet, many studies of international trade emphasize only the starting and finish lines of the supply chain, with little consideration of how goods arrive at their final destination. A closer look at the logistics reveals a story of competition and innovation, in which a complex and dynamic network of ships moves the vast majority of traded goods across the world's oceans. A number of indexes document two principal sectors of maritime shipping—dry bulk and container cargo—and are believed to foretell broader production and commercial developments. Understanding the methodology used in these measurements aids the understanding of international trade trends and their implication for recovery from the global financial crisis.

Dry Bulk Market

Baltic Dry Index: An Industry Standard

The Baltic Dry Index (BDI) measures shipping costs for dry bulk commodities, including coal, grain, iron ore, finished steel and other metals, minerals and similar materials. Representatives of the Baltic Exchange, the ship brokers' association responsible for publishing the index, canvass a panel of members daily and gather charter rates (in U.S. dollars) for representative cargoes and routes. In a "time charter" system, agents seeking to transport cargo typically work through brokers, who hire a ship at a per diem rate. The charter is active from the moment the ship's owner delivers a vessel for voyage until it is returned free of cargo. Charters may be thought of as a type of forward agreement: Both brokers and their clients gain the security of set income and availability at the risk of losing out on favorable future price movements.

Additionally, the Baltic International Freight Futures Exchange uses the BDI as a settlement index, providing sellers and buyers a baseline for futures contracts used to hedge charter rates.

The BDI began in 1985 as the Baltic Freight Index, based on a weighted average of shipping costs on 13 trade routes: grain (five routes), coal (three routes), iron ore (one route) and general charter (four routes).¹ The Baltic Exchange reserves the right to modify these routes or their weightings, and since 1985, the number of routes included in the index has increased to match trade volumes. In October 2001, the BDI underwent major expansion to cover 26 shipping routes and four vessel sizes: Handysize, Supramax, Panamax and Capesize.² Their names refer to limits on their ability to transit the Panama Canal: Handysize and Supramax ships have no restrictions due to size, Panamax are at the limit for passage and Capesize are too large for the canal and must travel around the Cape of Good Hope off South Africa or Cape Horn at the tip of South America. These carriers typically transport cargo in lots exceeding 10,000 dead-weight tons (DWT); most often, a single client books an entire vessel for one cargo type. These size classes comprise 36 percent of the merchant and nonmerchant global fleet of ships.³

The Baltic Exchange employs a methodology that preserves the continuity of the BDI through vessel and route modifications by calculating a time-charter average (TCA), a standard metric used in the shipping industry to assess the daily average revenue performance of a given vessel. Expressed in U.S. dollars per voyage day, the TCA is computed by subtracting expenses such as port costs from voyage revenue and dividing the adjusted number by the number of voyage days. The TCA for an entire vessel class is found by taking the average of all individual TCAs. The composite

BDI is the product of an unweighted average of TCAs for all vessel classes and a “continuity multiplier,” which changes when routes or vessel classes are added to or removed from the index. The BDI calculation is

$$\text{BDI} = (\text{CapesizeTCA} + \text{PanamaxTCA} + \text{SupramaxTCA} + \text{HandysizeTCA}) / 4 * 0.113473601$$

As an index for the dry bulk shipping industry, the BDI’s advantages are its rich historical data, large underlying membership and daily frequency of time charter rates. The index has gained a reputation as a bellwether of economic activity and is used to forecast industrial production and economic growth. Unlike forward rate agreements, the index lacks a speculative component; in theory, it operates according to the fundamentals of supply and demand for ship capacity in real time. An index that trends upward means shipping prices are being bid up. This should signal rising demand for shipping space and accelerating economic activity.

However, critics downplay the BDI’s predictive power. China’s rapid industrialization, they say, has shifted the index to reflect Chinese demand for commodities. They also point to commodity futures markets as providing better metrics for predicting future demand and to overcapacity that plagues both dry bulk and container fleets. In normal circumstances, the critics say, the index may hint at the direction of activity, but the financial crisis has revealed instability in the measure that makes it unsuitable as a predictive tool.

Supply Sensitivity Causes Volatility in BDI

A closer look into the methodology of the BDI reveals that index values may change even if underlying demand for capacity does not. Since the BDI approximates the prevailing rate for cargo space, the index may drop if excess space—added capacity

for which no demand exists—comes online. This pattern occurs frequently in the shipbuilding cycle, as shipbuilders respond to high demand by ramping up construction of vessels, which require two to three years to complete. By then, demand may have diminished and these deliveries may not be needed. Additionally, shipyards do not adjust output quickly and will offer low vessel prices in a depressed market to unload excess inventory. This combination of delayed supply and prolonged periods of excess capacity causes shipbuilding cycles to last longer than broader business cycles. The BDI becomes especially volatile when supply and demand for shipping capacity change simultaneously, as occurred during the recent shipping bust (*Chart 1*).

After a 2005–07 shipping boom, the BDI dropped 94 percent from May to December 2008 during the throes of the global financial crisis. In June 2010, the index averaged 2,375, a fourfold increase from the December 2008 trough, but still more than 2,000 points off the three-year average.

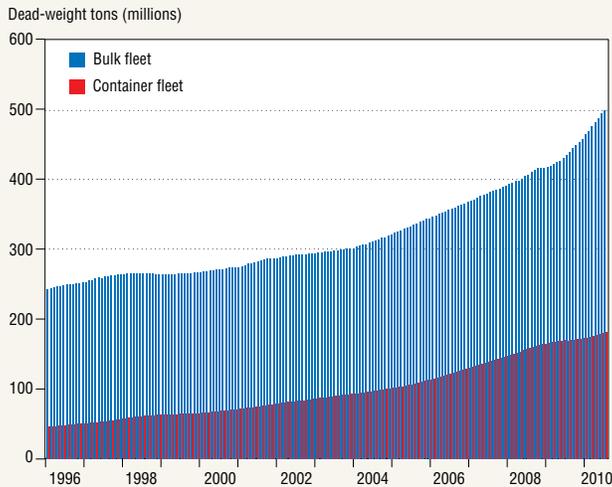
Chart 1
The Baltic Dry Index

Index, Jan. 4, 1985 = 1,000



SOURCES: Baltic Exchange; Bloomberg.

Chart 2
Dry Bulk and Container Ship Fleet Growth



SOURCE: Clarkson's Shipping Register 2010.

From last May 25 to July 16, the index dropped from more than 4,000 points to just above 1,700, an almost 58 percent decline. After rallying in the fall, the index fell again to close out 2010 below 1,800.

Also, dry bulk goods are used principally to produce other goods, and demand is dependent on when finished goods come to market. Rice and grain can arrive in consumer markets quickly, while iron ore manufactured into steel requires more time. Thus, even if raw goods shipments are expanding, when the supply chain will move these items into their finished stage isn't clear. Economic surprises, unanticipated pricing changes, tariffs and quotas can disrupt the supply chain and delay manufacturing, complicating the BDI's ability to predict the direction and pace of global economic activity.

The Container Ship Market

A ship carrying dry bulk cargo usually transports a single type of load, such as iron ore, coal or grain. Container ships, by comparison, typically carry a wide variety of finished goods from a mul-

titude of sellers. Before the standardized shipping container gained popularity in the 1950s, moving such cargoes was inefficient and even dangerous.⁴ An International Organization for Standardization (ISO)-approved standard container measures 20 x 8 x 8.5 (twenty-foot equivalent unit, TEU) or 40 x 8 x 8.5 (forty-foot equivalent unit, FEU) and provides ship owners with homogeneous cargo, mechanized loading and discharging systems, and streamlined transport across ship, truck and rail.⁵

As of August 2010, 4,914 container ships with a carrying capacity of 178 million DWT sailed in the world fleet, compared with 7,748 dry bulk carriers with a capacity of 500 million DWT. From 1990 to 2006, the worldwide container ship fleet grew 9.2 percent, while the dry bulk fleet expanded more slowly, 3.2 percent.⁶ However, since 2009, the dry bulk fleet has grown significantly faster than the container ship fleet (*Chart 2*).

While the dry bulk market has its de facto standard measure of costs, no single standard serves such a role for container shipping. Instead, ship brokers' associations assemble indexes based on data from member fleets. Container ship indexes measure either container ship spot rates or time-charter rates. Spot rate indexes record the current cash price of transporting an ISO-approved container across a designated route for immediate payment and delivery and serve as a sector snapshot of the container ship market. For example, Drewry Shipping Consultants releases a container ship spot-rate index that tracks the cost of transporting an FEU container between Hong Kong and Los Angeles. By comparison, time-charter data for container ships are calculated the same way as for dry bulk shipping and are provided in earnings per voyage day.

The container ship market reached record lows in port traffic, spot prices and time-charter rates during the global financial crisis. A disparity between cash and charter rates grew as liner companies, coping with low import volumes, reduced capacity by returning vessels as soon as charters

expired. Sellers also managed risk by signing shorter charter contracts, further depressing prices.

Container fleet capacity grew 6 percent in 2009, while demand fell 11 percent. In 2010, even with slow steaming—a tactic by liners to reduce the speed of ships in their fleet, keeping ships full of cargo longer—and scrapping, which analysts estimate effectively reduced capacity growth to 1 percent of current fleet size, supply exceeded demand by 12 percent.⁷ Meanwhile, 36 percent of scheduled deliveries never materialized due to cancellation or postponement. Accordingly, orders for new container ships fell 26 percent, with 94,720 TEU contracted for in 2009, representing less than 2 percent of ships already on order. Meanwhile, liners scrapped 340,000 TEU in 2009, a record high, though most retired vessels were small. Disproportionate growth in large, Capesize class container ships offset the impact of scrapping.

In 2010, 2.1 million TEU were scheduled to enter the container fleet, including 1.4 million in the Capesize class. However, analysts at Danish Ship Finance, a Copenhagen-based financing firm, estimate that liners deferred 760,000 TEU until 2011 and undertook more extensive scrapping (an estimated 390,000 TEU) and slow steaming to compensate for the rapid capacity expansion.

Harper Petersen Index (HARPEX)

HARPEX is a container ship charter rate index released by Harper Petersen and Co., a ship broker based in London and Hamburg. Like the Baltic Exchange, Harper Petersen collects information from its members. Instead of using shipping routes as a unit of analysis, HARPEX weights average daily charter rates across eight size classes of vessels to formulate its index.

Harper Petersen calculates an average vessel rate based on the number of charter parties using a given ship and defines eight ship classes by storage capacity, speed and charter length (the duration that clients contract to use ship space). This average takes into account a base rate for each class of ves-

sel, defined as the sum of the cost of capital invested in the ship, which depreciates over time, and operating costs. Then, an index for each vessel class is compiled based on how the average vessel rate compares with its base rate. Individual indexes are weighted by class and averaged to form the composite HARPEX index, reported weekly (*Chart 3*).

Clarkson's ClarkSea Time Charter Index

Clarkson's, a ship broker based in London, publishes weekly time-charter average earnings for all vessels in the container market, making it the most broad-based such measure of shipping rates (*Chart 4*). According to Clarkson's, its gauge, the ClarkSea Time Charter Index, is the only published weekly indicator of earnings for all principal commercial vessel types. Figures are estimated as daily time-charter equivalents of voyage freight rates and are expressed in U.S. dollars/day per voyage. Unlike the HARPEX index, which uses freight rates dependent upon its eight vessel classes, Clarkson's calculates earnings based on a single freight rate and publishes rates for only the newest vessels. These methodological differences have not proven consequential: HARPEX and Clarkson's

Chart 3
HARPEX Index, 1995–2010



SOURCE: Harper Petersen Ship Brokers.

Chart 4
Clarkson's ClarkSea Time Charter Index



SOURCE: Clarkson's Shipping Register 2010.

Chart 5
Hamburg New Contex Index, 2007-10



SOURCE: Vereinigung Hamburger Schiffsmakler und Schiffsagenten e. V.

data track each other with high correlation, a comparison of the two shows.

Hamburg Shipbrokers' Association
New Contex Index

The Hamburg Shipbrokers' Association (VHSS) New Contex Index reports time-charter data from member brokers in Hamburg, Copenhagen, London and Paris (*Chart 5*). The index's strength is its breadth: More than 50 percent of the worldwide container fleet operates from Germany, and Hamburg brokers control 75 percent of all container charter tonnage, according to the VHSS. However, the dataset is not as comprehensive as Clarkson's since VHSS surveys only its members. The composite index is an analysis of container ship time-charter rates based on 20 to 30 Hamburg freight brokers across 10 size categories and a minimum charter period of three months. In this sense, the New Contex Index provides more granular data than Clarkson's index, which is a composite earnings benchmark. Since its creation in October 2007, the New Contex Index has tracked closely with Clarkson's, though its relatively short history limits its usefulness.

Producer Price Indexes

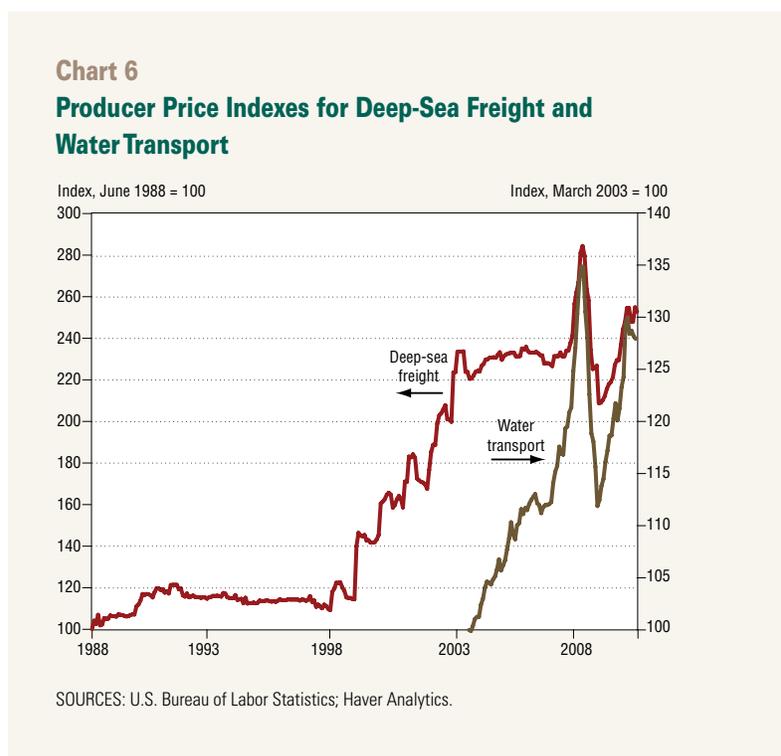
The U.S. Bureau of Labor Statistics (BLS) compiles producer price indexes and reports relative price changes for water and deep-sea freight transport (*Chart 6*). The water transport index includes inland shipping, while the deep-sea freight index focuses on open-water transport. The BLS systematically selects for polling U.S. manufacturers within an industry that seek unemployment insurance (as classified by the North American Industry Classification System). Because the probability of a firm's selection increases as its employee count rises, the survey appears weighted toward larger firms. Using disaggregation, a statistical technique in which the firms' goods are categorized according to how much they contribute to overall revenue, the BLS determines products and services to

be included in its survey. Disaggregation is carried out until specific products sold to specific buyers are identified and tracked over time.

Producer price index participants report for seven years, and the survey sample for each industry grouping is much larger than any other shipping trade index. These characteristics translate into low implied index volatility. However, the reliability that the index's large sample size achieves comes with a loss of precision. The BLS collects price data from all U.S.-based firms within the deep-sea freight industry, not just charter rates for container and dry bulk shipping. Participants are guaranteed confidentiality, so observers cannot know what proportion of the price index is composed of information from tonnage providers, dock operators, ship liners or other water transport entities. Finally, the BLS's reliance on U.S. firms excludes the large industry segment based outside the country.

Table 1 shows pair-wise correlation statistics between dry bulk and container indexes and prices for bunker fuel, a key variable ship cost. The HARPEX and BDI do not move in step, with a correlation coefficient equal to 0.16 from 1995 to 2010. (A coefficient of "1" would theoretically indicate complete agreement between the indexes.) What causes the disparity? Demand for commodities and finished goods do not move contemporaneously, but should peak and trough in a cyclical fashion: Finished goods are particularly sought during economic booms, while demand for raw goods generally lags behind and lasts longer as sellers replenish inventories depleted during periods of sustained demand. A year-over-year comparison, offering a more general view of index movements, provides a closer relation between the BDI and HARPEX, with a correlation coefficient of 0.7. Worth noting is the difference in volatility present in the BDI for 1995–2001 compared with 2001–10, which suggests that an adjustment in index methodology may have played a role in how the BDI compares with other shipping indexes.

The BDI and the producer price index simi-



larly lack correlation, with a coefficient of 0.08 before 2001 and -0.03 afterward. The producer price index draws on data only from companies seeking unemployment insurance in the United States; by comparison, only one of the BDI ship brokers' data providers is a U.S. firm (John F. Dillon and Co.). While both indexes measure aggregate prices for maritime shipping, they share little methodological common ground. Indexes for the container shipping industry, on the other hand, track each other to a high degree. HARPEX and Clarkson's have the highest correlation in the analysis, 0.76, over the entire sample range.

Shipping Indexes and Energy Prices

Even with maritime transport's economies of scale, moving thousands of tons of cargo still requires significant maintenance and fuel expense. The cost of bunker fuel, as an input to production, affects time-charter and spot rates and likely influences dry bulk and container ship indexes. As anticipated, the correlation coefficient between

No. 6 crude oil (bunker fuel) and the BDI is higher than the correlation with any other index, 0.35 for 1986–2010. Following the index revision in 2001, the BDI began to track more closely with bunker fuel prices, 0.4.

Oil prices, however, appear to factor less into container shipping market indexes. The correlation coefficient between the HARPEX index and bunker spot prices is 0.2 for 1995–2010; between Clarkson’s index and bunker oil, 0.26. One reason for the disparity: Materials classified as “dry bulk” are denser than container cargo, meaning that for a given volume and distance, dry bulk cargoes are heavier and more energy-intensive.

Conclusion

Maritime shipping markets for bulk and container cargo have rebounded since the global financial crisis, but industry indexes have not converged to signal a future path. While container shipping seems to have recovered, reflecting

global trade volumes, dry bulk commodities, as measured by the BDI, have faltered and still exhibit high volatility. Dry bulk shippers continue to confront excess capacity in an uneven demand environment. Fleets expanded rapidly during the 2005–07 shipping boom in both container ship and dry bulk sectors, especially in the larger ship classes. Heightened demand spurred investment to increase vessel capacities and encouraged intense investment in shipbuilding. As a result, China solidified its presence as a top-tier shipbuilding nation, while orders for new vessels and earnings reached record highs. The global financial crisis hit shipping especially hard, as sellers kept inventories low amid a scarcity of credit. Weak final demand created significant capacity surpluses, following the boom-period fleet additions. With emergence of a new pace of trade, vessel scrapping intensified amid sluggish growth in advanced markets.

By examining the methodology used to create the sector’s indexes, we understand how reliably

Table 1
Comparison of Shipping Rates

(Pair-wise correlation table of shipping indexes and fuel cost*)

January 1995–September 2001

	Baltic Dry	Clarkson’s	HARPEX	Producer price index	Bunker fuel	Standard deviation
Baltic Dry	1	0.28	0.20	0.08	0.21	0.08
Clarkson’s	0.28	1	0.61	0.07	0.17	0.07
HARPEX	0.20	0.61	1	0.15	0.21	0.06
Producer price index	0.08	0.07	0.15	1	0.16	0.02
Bunker fuel	0.21	0.17	0.21	0.16	1	0.10

October 2001–November 2010

	Baltic Dry	Clarkson’s	HARPEX	Producer price index	Bunker fuel	Standard deviation
Baltic Dry	1	0.20	0.15	−0.03	0.40	0.21
Clarkson’s	0.20	1	0.83	0.24	0.28	0.07
HARPEX	0.15	0.83	1	0.36	0.18	0.06
Producer price index	−0.03	0.24	0.36	1	0.10	0.02
Bunker fuel	0.40	0.28	0.18	0.10	1	0.10

*Due to its brief history, the Hamburg Index is not included in the correlation analysis.

SOURCE: Author’s calculations.

they capture the state of global markets as well as the potential for predicting future economic activity. Shipping indexes can measure time-charter rates, spot rates or aggregate prices, and all rely on survey data gathered from or estimated by panelists, participants or members of ship brokering associations. Evaluation of these indexes suggests that dry bulk shipments tend to face mismatches in the timing of supply and demand because of the relatively long lifespan of the bulk cargo fleet, while container ships are more versatile, carry cargo from many sellers and are generally smaller. Although the BDI remains the industry standard for dry bulk shipping, the container shipping industry has multiple indexes that generally track one another closely. However, differing sample sizes as well as methods of indexing, data collection and aggregation introduce relative strengths and weaknesses for each measure (Table 2). Such differences may yield index values that are biased or do not reflect the totality of global shipping ac-

tivity and illustrate the importance of a careful and holistic evaluation of all evidence when offering analysis or predicting future trends.

—Payton Odom

Notes

¹ Martin Stopford's *Maritime Economics* text contains a comprehensive discussion of the Baltic Dry Index and is cited throughout this article. See *Maritime Economics*, by Martin Stopford, London: Routledge, 2009.

² Information on the composition and calculation of the Baltic Dry Index comes from the Baltic Exchange's *Manual for Panelists: A Guide to Freight Reporting and Index Production*, www.balticexchange.com.

³ "Review of Maritime Transport 2010," United Nations Conference on Trade and Development, New York and Geneva, 2010.

⁴ See *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*, by Marc Levinson, Princeton: Princeton University Press, 2006.

⁵ See note 1, Stopford, p. 574.

⁶ See note 1, Stopford, p. 370.

⁷ "Shipping Market Review," Danish Ship Finance, Copenhagen, April 2010.

Table 2
Summary of Shipping Indexes

Index	Type	Method	Advantages	Disadvantages
Baltic Dry	Dry bulk	Time-charter equivalent earnings average across four size classes	Historical data, large membership listing, industry standard status	Subject to overstated volatility due to fixed supply, changes in methodology affect volatility of index, simple average calculation ignores contributions to price changes by different vessel classes
HARPEX	Container cargo	Time-charter equivalent earnings across four size classes	Measures and weights eight size classes of container ship, includes vessel prices for previous four years	Near-perfect correlation with Clarkson's but with smaller sample size
Clarkson's	Container cargo	Weighted average of all container ship earnings	Most comprehensive and longest spanning of container series	Earnings based on a single freight rate and only most-modern vessels are used—potential for bias on the upside
Hamburg	Container cargo	Time-charter equivalent weighted across 10 size classes	Only company-independent analysis of time-charter rates	Limited history and sample size
Producer price index	All water transport and deep-sea freighting	Price data from a sample of firms' products and services over time	Large sample size, low index volatility, only capture of aggregate price level that is not an average across different size classes	Only captures data from U.S. shipping companies, weighted toward larger firms, does not distinguish between charter rates and other services involved in water transport, does not distinguish between liners and bulk shippers nor between cargo types

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The Federal Reserve Bank of Dallas and Vanderbilt University's Center for International Price Research cosponsored a conference titled "Microeconomic Sources of Real Exchange Rate Behavior," held at Vanderbilt University in Nashville, Tenn., on Sept. 23–25, 2010.

The following papers are available on the Dallas Fed website at www.dallasfed.org/institute/events/2010/10micro.cfm. Names with an asterisk (*) are those of coauthors who presented at the conference.

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University of Iowa



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大清海國圖志卷之二

北極

北極



海大合

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其多以魚為食

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以有千余山家之主

食人國

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海國之民也
其地有山家之主
其地有山家之主

大清海

一於光緒十五年隨王使公
為之買地其地極廣
在亞細亞東海之國
則至東洋之北極

有城市皆用
石而建築
曰是名城也

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曰是名城也
其地有山家之主

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亦有山家之主

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