



Summary

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The State of the US and World Economies

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L. RANDALL WRAY, Senior Scholar
GREG HANNSGEN, Research Scholar
MICHALIS NIKIFOROS, Research Scholar
GENNARO ZEZZA, Research Scholar
GIORGOS ARGITIS, Research Associate
MARSHALL AUERBACK, Research Associate
CLAUDIO H. DOS SANTOS, Research Associate
JESUS FELIPE, Research Associate
ECKHARD HEIN, Research Associate
MICHAEL HUDSON, Research Associate
ROBERT W. PARENTEAU, Research Associate
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SUNANDA SEN, Research Associate
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NILÜFER ÇAĞATAY, Research Associate
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PINAKI CHAKRABORTY, Research Associate
VALERIA ESQUIVEL, Research Associate
INDIRA HIRWAY, Research Associate

İPEK İLKKARACAN, Research Associate
EBRU KONGAR, Research Associate
EMEL MEMİŞ, Research Associate
IMRAAN VALODIA, Research Associate
TAUN TOAY, Research Analyst

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VALERIA ESQUIVEL, Research Associate
MATHEW FORSTATER, Research Associate
FADHEL KABOUB, Research Associate
PAVLINA R. TCHERNEVA, Research Associate

Immigration, Ethnicity, and Social Structure

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SERGIO DELLAPERGOLA, Research Associate
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SEYMOUR SPILERMAN, Research Associate

Economic Policy for the 21st Century

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JAMES K. GALBRAITH, Senior Scholar
JOHN F. HENRY, Senior Scholar
L. RANDALL WRAY, Senior Scholar
AJIT ZACHARIAS, Senior Scholar
LEONARDO BURLAMAQUI, Research Scholar
GREG HANNSGEN, Research Scholar
TAMAR KHITARISHVILI, Research Scholar
TAI YOUNG-TAFT, Research Scholar
PHILIP ARESTIS, Research Associate
GIORGOS ARGITIS, Research Associate
MARSHALL AUERBACK, Research Associate
WILLIAM J. BAUMOL, Research Associate
JÖRG BIBOW, Research Associate
MARTIN BINDER, Research Associate
LEKHA S. CHAKRABORTY, Research Associate
PINAKI CHAKRABORTY, Research Associate
SANJAYA DESILVA, Research Associate
STEVEN M. FAZZARI, Research Associate
JESUS FELIPE, Research Associate
GIUSEPPE FONTANA, Research Associate
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MICHAEL HUDSON, Research Associate
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STEPHANIE A. KELTON, Research Associate
WILLIAM H. LAZONICK, Research Associate
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JAMES B. REBITZER, Research Associate
MALCOLM SAWYER, Research Associate
MARTIN SHUBIK, Research Associate
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MICHAEL STEPHENS, Senior Editor and Policy Fellow

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Inquiries regarding contributions could be sent to Dimitri B. Papadimitriou, President, Levy Economics Institute of Bard College, Blithewood, Annandale-on-Hudson, NY 12504-5000. Phone: 845-758-7700, 202-887-8464 (in Washington, D.C.) Fax: 845-758-1149 E-mail: info@levy.org Website: www.levyinstitute.org

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LETTER FROM THE PRESIDENT

To our readers:

This issue opens with a strategic analysis of the Greek economy by Research Scholars Michalis Nikiforos and Gennaro Zezza and me, under the State of the US and World Economies program. We argue that Greece will not return to growth until confidence and trust in the economy are restored. We also suggest alternative financing strategies to expand the domestic policy space and fund a job creation program while complying with current treaties. In a related policy note, we discuss the practical and moral issues surrounding Greece's sovereign debt. History, we observe, provides a model for how to proceed: the debt reduction and reconstruction assistance Germany received under the Marshall Plan. Turning to our most recent strategic analysis for the United States, Research Scholar Greg Hannsgen, Nikiforos, Zezza, and I identify fiscal austerity, a rising dollar, and income inequality as factors that continue to hamper the recovery and pose long-term threats to the economy.

In the first of three policy notes under this program, Research Associate Sunanda Sen discusses a clearing arrangement using local currencies to improve the global financial system, particularly for emerging economies. Research Associate Pavlina R. Tcherneva analyzes the shares of income captured by different income groups during the US economic expansions of the postwar period, and finds that a dwindling share of the gains in income growth has gone to the bottom 90 percent of families. And Nikiforos, Zezza, and I discuss the practical and moral issues surrounding Greece's sovereign debt.

Three working papers are also included under this program. Nikiforos presents a nonbehavioral theory of savings that references the work of Distinguished Scholar Wynne Godley. He cautions that increased private sector debt, especially in lower-income households, remains an unsustainable vehicle to sustain the US economy. Research Associate Jörg Bibow elaborates on his proposal for establishing a Euro Treasury as a way to repair a basic flaw in the design of the euro, provide the public investment stimulus needed to end the crisis, and pave the way for further integration under the euro. Riccardo Realfonzo and Angelantonio Viscione provide an analysis of the impacts of currency devaluations (i.e., a

close parallel to a euro exit scenario) in terms of trade, growth, employment, and wages.

Director of Research Jan Kregel contributes three publications under the Monetary Policy and Financial Structure program. In a policy brief, he offers a proposal for clearing unions to address some of the deficiencies encountered by emerging economies in the current global financial system; he also explores this proposal in a working paper. In a policy note, Kregel argues that Germany's insistence on austerity policies is in fact an effort to advance the political integration it has long regarded as a precondition for the euro. Hannsgen and Research Scholar Tai Young-Taft propose a dynamic, and perhaps unique, approach to modeling some of the essential elements of Minsky's financial instability hypothesis. Marianna Mazzucato and Senior Scholar L. Randall Wray discuss the capital development, or lack thereof, of the US and UK economies in an increasingly financialized environment and present policy prescriptions for sustainable, inclusive growth. Examining issues in emerging markets, Tanweer Akram and Anupam Das test John Maynard Keynes's observations on the relationship between short- and long-term interest rates using Indian government bond yields. Alla Semenova and Wray examine the historical development of money and class society, drawing on the work of Senior Scholar John F. Henry.

The Distribution of Income and Wealth program includes a policy note by Research Scholar Fernando Rios-Avila that investigates the evolution of wages in the United States since 1994. His analysis covers wage trends for wage-level, age, and education groups, with an emphasis on the periods following the 2001 and 2007–09 recessions. A working paper by Gustavo Canavire-Bacarreza and Rios-Avila examines recent changes in wage inequality and questions the sustainability of these changes for the long term.

In a working paper under the Gender Equality and the Economy program, Research Associate Indira Hirway argues that until macroeconomic analysis includes unpaid work, particularly the unpaid care work that is disproportionately performed by women, policy prescriptions will remain flawed.

The final two papers in this issue are included under the Economic Policy for the 21st Century program. Young-Taft discusses Karl Marx's commodity theory of money within the context of fiat and electronic currencies. And Research Scholars Tamar Khitarishvili, Rios-Avila, and Kijong Kim present their

findings on the elasticity of substitution in household decisions to prepare or purchase meals. Their study makes a methodological contribution to the literature while providing valuable guidance for programs and policies designed to improve the health of children and families.

As always, I look forward to your comments.

Dimitri B. Papadimitriou, *President*

Program: The State of the US and World Economies

Strategic Analysis

Greece: Conditions and Strategies for Economic Recovery

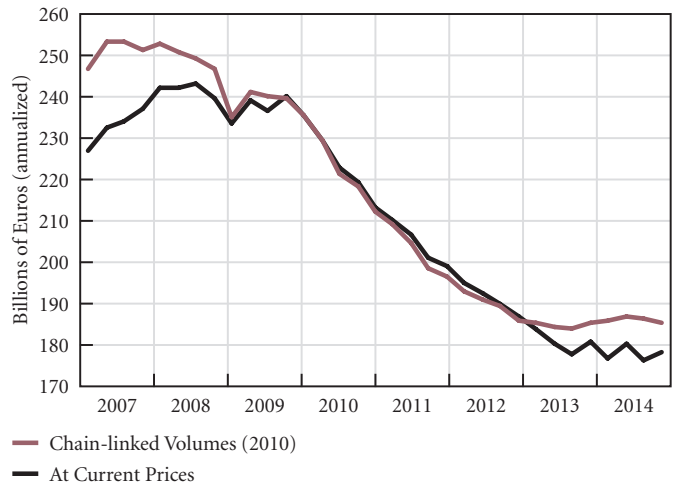
DIMITRI B. PAPADIMITRIOU, MICHALIS NIKIFOROS, and GENNARO ZEZZA

Strategic Analysis, May 2015

In the latest strategic analysis for Greece Levy Institute President Dimitri B. Papadimitriou and Research Scholars Michalis Nikiforos and Gennaro Zezza assess the medium-term prospects for the Greek economy, and conclude that access to alternative sources of financing and liquidity could lead to growth and job creation. They argue that restoring confidence in the Greek economy is paramount. For this to happen, Greece's existing government debt must be rolled over and austerity policies must end. The Greek government and its international creditors—the International Monetary Fund (IMF), the European Central Bank, and the European Commission (aka the troika)—must pursue policies that will promote growth in output and income if the country is to repay its debt. The authors present their analysis and findings within the context of negotiations on a third bailout for Greece in the early summer of 2015, in the hope of providing policy alternatives that would satisfy all parties and allow recovery to commence. They first review key dimensions of the performance of the Greek economy and then present simulations of several scenarios for a three-year period ending in 2017.

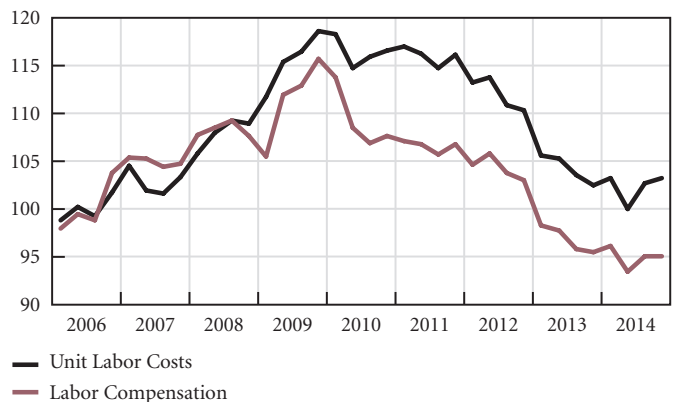
The most recent estimates available for this analysis suggest that the Greek economy may have slipped back into recession in the second quarter of 2014 (Figure 1). It is, however, clear that Greek real output showed fragile and modest gains in 2014, following six years of continuous decline. However, real output at the end of 2014 remained below its 2000 level, a

Figure 1 Greece: GDP



Source: ElStat

Figure 2 Greece: Labor Cost Indices (2006=100)



Source: OECD

more than 26 percent decline since 2007. Employment fell 30 percent during the same period. Despite the recent, modest growth in tourism, total real output continued to decline in the last quarter of 2014 and the first quarter of 2015, while other sectors were flat or declining.

Turning to the impact of structural reforms in the labor market, the authors observe that the Organisation for Economic Co-operation and Development index of labor compensation and unit labor costs fell 17.8 and 20 percent, respectively, compared to the peak year of 2010. However, the authors note that these declines have not been evenly distributed across all

sectors of the Greek economy nor are they consistent with wage patterns in other eurozone countries. If comparatively high unit labor costs were an obstacle to economic growth, austerity has certainly “cured” Greece, yet growth has yet to return (Figure 2).

The trend in prices also casts doubt on the merits of internal devaluation: Greek wages have fallen sharply but prices have not fallen and thus the trade imbalance remains largely unchanged. Further, increased indirect taxes have also prevented domestic prices from falling. As noted in earlier reports, the authors observe that income elasticity is more relevant to trade than price elasticity. Most of the improvement in the current account balance is a result of lower imports, while improvements in exports are due mainly to changes in export activities and/or trading partners. Furthermore, internal devaluation was implemented with the expectation that higher profits would spur investment; instead, Greece has seen increased deleveraging and little increase in investment. Deflation has brought down wages sharply, with prices following more slowly, leading to a decline in real income and the collapse of domestic demand.

The second pillar of the troika’s plan (i.e., the reduction of government debt as a share of GDP) has also failed (Figure 3). The collapse of GDP has increased the debt ratio, and the stock of debt, *after* the haircut, has returned to 2009 precrisis levels. The authors recall that the increase in Greece’s gross debt is due entirely to payments to the financial sector. The funds received through international loans have been mainly

used to recapitalize the banks, not to promote economic recovery. And support for the financial sector has done little to address the worrisome (high) volume of nonperforming loans.

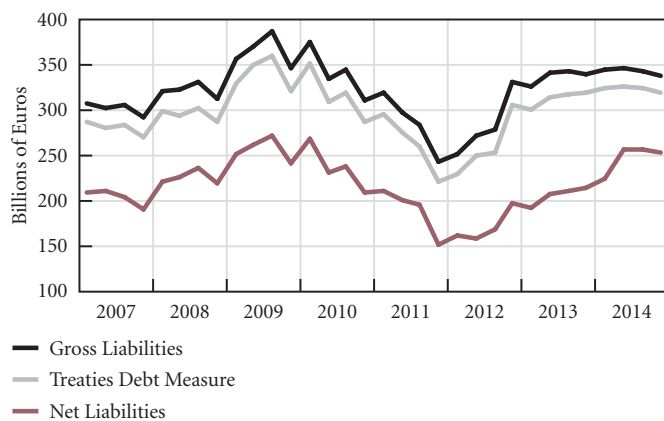
The authors caution that uncertainty surrounding negotiations with the troika complicates creating simulations of the Greek economy and also poses a threat to the prospect of recovery itself. They begin with a “pessimistic” baseline scenario that assumes a deal is reached quickly, no further fiscal austerity is imposed, the existing debt is refinanced, and interest payments are made as required. The baseline simulation includes a set of assumptions drawn from the IMF’s World Economic Outlook Database, and further assumes a stable exchange rate between the euro and the US dollar, stable interest rates, and so on.

The baseline results show a 1.4 percent decline in real GDP in 2015, due principally to the decrease in private expenditures. The authors find that if Greece rolls over its existing debt but no longer receives external finance, and therefore cannot pursue expansionary policies, it will remain in recession for a year or more before the tourism sector leads a weak recovery. A second, more optimistic, baseline scenario assumes an additional €1 billion investment takes place in the second half of 2015 and exports increase by 10 percent more than in the pessimistic baseline scenario. Under these assumptions, real output grows by 0.97 percent in 2015 and a primary surplus is achieved in 2016. Job creation increases, but not at a rate sufficient to address the current level of unemployment in Greece.

The authors next present two proposals to spur economic recovery and remain in compliance with European Union treaties and current rules regulating monetary authorities. The proposals focus on the introduction of two alternative financing instruments to fund a direct job creation program: a zero-coupon bond, or “Geuro,” and fiscal credit certificates (FCCs).

The Geuro, a parallel currency, would be convertible in one direction (euro to Geuro) and could be used as money; it would bear no interest, be perpetual and transferable, and would be carefully controlled and temporary. However, Greece would not redenominate existing financial assets or liabilities in Geuros, nor would it require private transactions to be settled in Geuros. The purpose of the Geuro would be to restore liquidity in the domestic economy and to provide liquidity for government expenditures. The authors propose to use the Geuro to finance a direct job creation program for 550,000

Figure 3 Greece: Government Debt



Source: Bank of Greece

workers, phased in over two years. Simulating this proposal, they find that the Geuro scenario, in tandem with the more optimistic baseline scenario, initially increases the government deficit but ultimately causes the debt as a share of GDP to decline. Introducing the Geuro would allow the government to finance the job creation program, and restoration of liquidity should buoy expectations and encourage private investment.

The second proposal is the creation of an alternative financing mechanism used to pay taxes after a holding period. FCCs would not be used immediately as a parallel currency (though they could be used for payments by mutual consent). The holding period would enable the economy to grow following the fiscal stimulus created by the FCCs, which would in turn create greater revenues. FCCs would be used primarily to increase public expenditures, such as the public job creation program. The impact of the FCC proposal in combination with the optimistic baseline scenario yields an expansion of public expenditures that in turn promotes growth and job creation, while maintaining government accounts in euros.

The authors note in closing that their analysis does not contemplate a Greek exit from the euro, recognizing that such a change would create substantial costs for Greece. Avoiding such disruption is in the interest of all parties, yet it might be the price Greece pays to return to policies focused on the well-being of its citizens rather than its international creditors. There is little, the authors observe, to suggest that markets alone can rescue the Greek economy without a recovery plan and decisive action. These proposals offer a means by which Greece could remain within the euro while restoring confidence and increasing the policy space it needs to recover.

http://www.levyinstitute.org/pubs/sa_gr_5_15.pdf

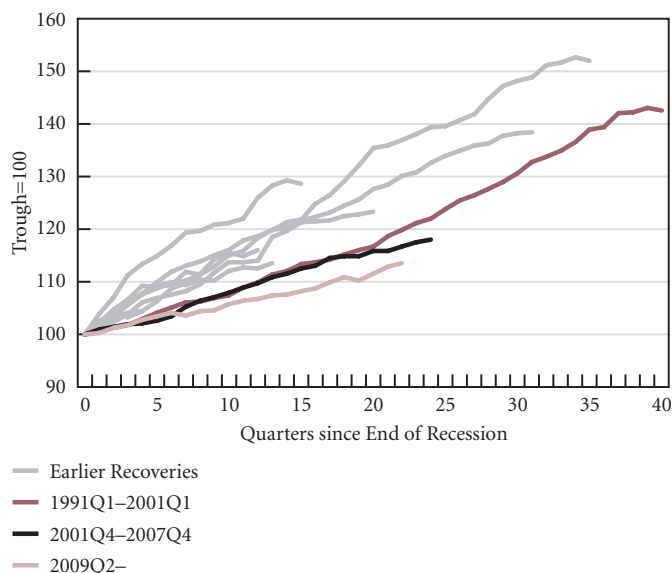
Fiscal Austerity, Dollar Appreciation, and Maldistribution Will Derail the US Economy

DIMITRI B. PAPANIMITRIOU, GREG HANNSGEN, MICHALIS NIKIFOROS, and GENNARO ZEZZA

Strategic Analysis, May 2015

As the US enters the sixth year of the weakest recovery in the postwar period (Figure 1), Levy Institute President Dimitri B. Papanimitriou and Research Scholars Greg Hannsgen, Michalis Nikiforos, and Gennaro Zezza review the conditions,

Figure 1 Index of Real GDP in US Recoveries, 1949–2015Q1



Sources: BEA; National Bureau of Economic Research (NBER); authors' calculations

trends, and medium-term outlook for the US economy. Their analysis sheds light on the underlying causes of the current, anemic recovery and focuses on three structural obstacles to growth: weak performance of net exports, persistent fiscal conservatism, and high income inequality. These factors, in combination with an ongoing trend in household deleveraging, have limited growth. Using the financial balances approach of the Levy macroeconomic model, they find that the US economic recovery, absent decisive policy action, depends on an increase in private borrowing. This implies rising debt and debt-to-income ratios, particularly among households in the bottom 90 percent of the income distribution—precisely the pattern that preceded the last two recessions.

The authors begin with a review of the components of the US economy—that is, personal consumption expenditures, gross private investment, government consumption and gross investment, and exports minus imports. They note that the recovery of consumption, a critical driver of the US economy, has been slower in the current recovery than in any other recovery in the postwar period. This explains much of the weakness in the economy. The authors attribute the lack of increased consumption to high levels of income inequality and household deleveraging following the crisis.

Private investment is performing better than in the previous recovery in the early 2000s, but it remains anemic. The authors note that private investment has been weaker following its most recent peak in 2007 than in any other peak-to-peak period since 1949. However, government spending has been the most important drag on the present recovery. The authors observe that there has never been a US recovery in modern times when real government spending decreased (aside from a short cycle in the 1970s). Thus far, exports have been the spark for the current recovery. The recent growth in exports has been average compared to other postwar cycles but significantly better than in the last two cycles. However, weak foreign demand has led to a significant decline in export growth. Imports, which reduce GDP, fall into two distinct phases during the present recovery. There was a steep increase in imports at the beginning of the recovery—steeper than in nearly all other postwar recoveries. However, in the past three years, the pace of imports has slowed considerably. At the moment, exports continue to support the recovery, and to some extent offset the weakness in the other components of GDP.

In terms of the primary income balance, the authors caution that the improvement is due to an increase in the yield spread between US-owned foreign assets and foreign-owned US liabilities following the crisis—a sign of increased fragility in the global economy and a result of the Federal Reserve’s quantitative easing program.

Turning to the growth in household consumption during the recovery the authors note that it has relied largely on the accumulation of new debt. Measuring consumer debt in relation to disposable income shows an upward trend and levels well above those seen in the 1980s and 1990s. And mortgage debt continues to decline, putting a further drag on the recovery. The authors argue that the use of consumer debt is symptomatic of the unequal recovery across social strata in this and previous recoveries, with net worth expanding for only the wealthiest Americans. The authors note that lackluster wage growth and higher levels of household debt cannot sustain growth, and there may be signs of another postcrisis household deleveraging. Despite the ongoing challenges faced by the US economy, the Congressional Budget Office’s (CBO) most recent report anticipates growth in the years ahead.

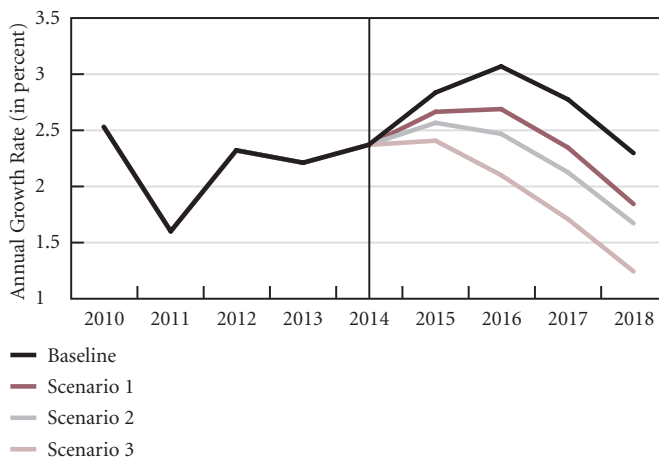
The authors begin with a baseline scenario to determine the requirements for the economy to reach the CBO’s projections

and to assess the feasibility of these requirements. They provide estimates of the private sector spending and borrowing behavior necessary to meet the CBO’s projected small decline in the federal deficit and modest real GDP growth through 2018. The first of the two main findings of their simulation is a significant deterioration in the US foreign position, with a current account deficit of 5 percent of GDP in 2017 and beyond. Private sector net borrowing continues to rise and exceeds income in 2017 and 2018. Following simple accounting, they note that the increase in the current account deficit and a tight fiscal stance by the government implies that the private sector balance will decrease. Their second finding, therefore, is an unsustainable trend of debt rising in excess of income, a process that preceded both the recession of 2001 and the Great Recession. In both the present and in previous strategic analyses, the authors stress that private sector spending in excess of income implies an increase in the sector’s debt-to-income ratio, and is therefore unsustainable.

They next present scenarios to simulate several trends that pose threats to the US economy in the medium term. The first scenario examines the impact of a decline in the annual growth rates of US trading partners, while the second analyzes the potential impact of continued appreciation in the value of the US dollar. Finally, the third scenario combines the impacts of these two trends.

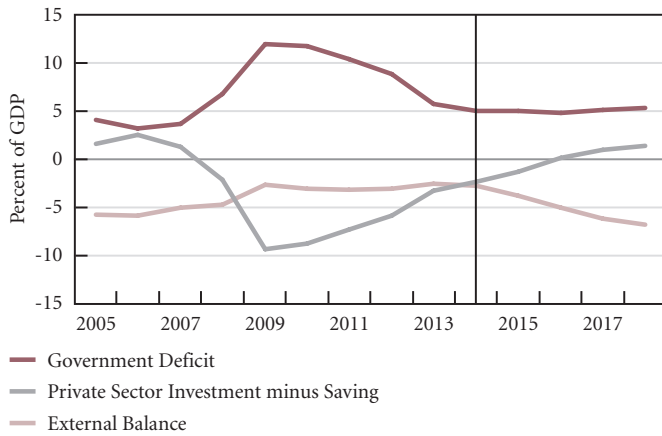
The first scenario simulates the impact of GDP growth rates (Figure 2) of US trading partners that are 1 percent lower than the International Monetary Fund’s most recent projections. The

Figure 2 Real GDP Growth, Actual and Projected, 2010–18



Sources: BEA; authors’ calculations

Figure 3 Scenario 3: US Main Sector Balances, Actual and Projected, 2005–18

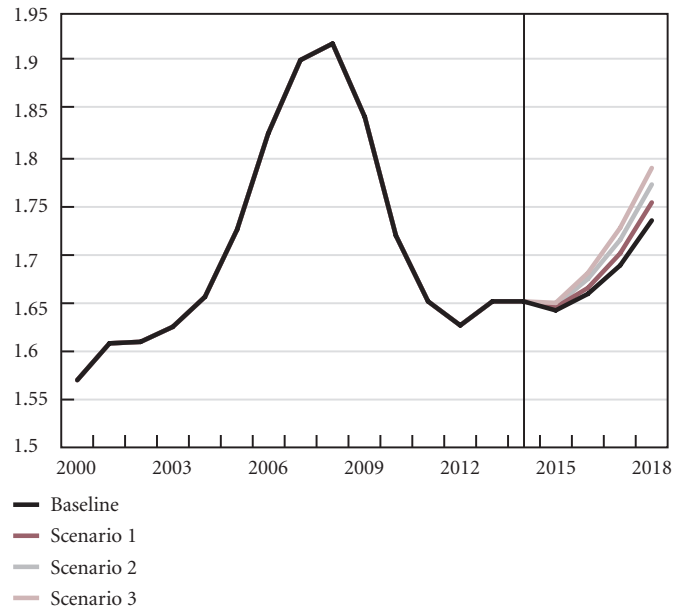


Sources: BEA; authors' calculations

impact on US growth is a nearly 0.5 percentage point reduction in the annual growth rate as compared to the baseline scenario. In the second scenario, an appreciation of the dollar has a stronger negative impact on the economy, reducing US GDP growth by 0.8 percentage point. The authors report that the combined impact of an appreciating dollar and a slowdown in the economies of US trading partners reduces the US growth rate by more than one percentage point. These scenarios demonstrate the vulnerability of the US economy to modest reduction in demand for US exports or a strengthening dollar. If both events occurred, the simulations show that by 2018 the US economy's growth rate would fall to its lowest level in four decades.

The authors underscore the implications of their analysis with a brief discussion of the financial balances of the three institutional sectors of the economy. They observe that an increasingly weak US growth rate develops in tandem with a rising current account deficit. As stressed in previous strategic analyses, improving the current account is essential to the recovery. In fact, in the combined scenario, the US current account deficit reaches 7 percent of GDP by 2018 (Figure 3). This increase in the current account deficit is partially covered by the deficit, and thus the debt-to-income ratio, of the private sector. The US economy thus faces weakening growth and an increasingly fragile economy. If the gross-debt-to-income ratio displayed in Figure 4 unfolds as simulated, by 2018 the

Figure 4 Private Gross-Debt-to-Disposable-Income Ratios, Actual and Projected, 2000–18



Sources: BEA; Federal Reserve; authors' calculations

United States will have leverage levels comparable to those reached on the eve of the Great Recession.

The authors conclude that the recovery of the US economy is impeded by the persistent fiscal conservatism of the federal government (unprecedented in previous US recovery periods), weak performance of US exports and imports, and high income inequality and the debt overhang from the last cycle. Achieving the growth rates outlined by the CBO would require an increase in the debt and debt-to-income ratio of the private sector—a clearly unsustainable path. Further, the US economy remains vulnerable to a slowdown in the growth rates of its trading partners and to an increase in the value of the dollar.

www.levyinstitute.org/pubs/sa_5_15.pdf

The BRICS Initiatives in the Current Global Conuncture: An Assessment in the Context of the IMF Rulings for Greece

SUNANDA SEN

Policy Note 2015/5, August 2015

In her most recent policy note, Research Associate Sunanda Sen discusses the emergence of new international sources of credit to support financial stability, growth, and development in developing countries. Led by the BRICS members (Brazil, Russia, India, China, and South Africa), the goal of these new sources of finance is to cast off the yoke of International Monetary Fund loan conditions as well as the dominance of the US dollar in global finance. New financial institutions including the New Development Bank (NDB), the Contingent Reserve Arrangement (CRA), and the Asian Infrastructure Investment Bank (AIIB), as well as China's various Silk Road initiatives, represent an alternative to the institutions established under Bretton Woods. The author first surveys these new institutions and then offers a proposal for regional clearing arrangements in local currencies, building on a past proposal by John Maynard Keynes and a recent policy brief by Director of Research Jan Kregel (Public Policy Brief No. 139, *Emerging Market Economies and the Reform of the International Financial Architecture*).

The purpose of the NDB is to provide liquidity to its members during balance-of-payments crises and to provide protection against global liquidity pressures; for example, to counter the disruptions associated with the end of the Federal Reserve's quantitative easing program. The NDB relies on equal capital contributions from BRICS members. Countries from outside the BRICS will be permitted to participate, but total non-BRICS contributions will never exceed 45 percent of the fund total. The equity share of each country will thus determine its level of representation in the decision-making process. In contrast, the CRA will provide \$100 billion from their foreign-exchange reserves to be used for swap lines for members. The largest contributor to the CRA is China, with \$41 billion.

The AIIB, with a total of 57 founding member countries, has been a source of controversy at various times, with both the United States and Japan opposing the project. The AIIB is open to BRICS and non-BRICS participants. Its goal is to promote

the development of infrastructure and to reduce the dependence of developing countries on official sources of financing.

Sen recounts many of the concerns raised in regard to these new BRICS-sponsored institutions, noting that most of the resistance comes from institutions formed under Bretton Woods and its main patron, the United States. She then turns to her proposal for a regional clearing arrangement using BRICS currencies.

The author notes that BRICS countries have recently begun trading in local currencies, relying on swaps and other bilateral payment agreements. One consequence of this practice is a reduction in the vulnerability of national economies to dollar-denominated transactions. Sen suggests that pairing this practice with Keynes's proposal for a clearing union, as recently discussed by Kregel, has the potential to reduce some of the persistent challenges faced by developing countries, especially those with chronic trade deficits.

Sen proposes a settlement of payment among BRICS members, following Keynes's banking principle (i.e., an equality of debits and credits, assets and liabilities within a closed bank). Prevailing exchange rates of member countries would be used to settle transactions, with the net balance remaining in the BRICS bank and later offset by transactions of one or more countries. The problem of surpluses in one currency to meet deficits in another would be sorted out using the prevailing cross rates, which could be frozen by forward contracts to ensure that these are not affected by exchange rate fluctuations in non-BRICS countries. Balances would be recorded in local currency units and bilateral balances used to settle their trade balances. The result of this proposal would be the creation of additional demand within the BRICS and lower demand, for example, for US Treasury bills.

Overall, a regional clearing arrangement using local currencies would provide a necessary degree of separation between the emerging BRICS economies and global exchange rate fluctuations. While the initial benefits would accrue to the participants, this proposal could ultimately transform the global financial architecture. Settlements for the participants would no longer rely on the dollar but on cross-BRICS rates, provided these are frozen by forward contracts. In addition to greater stability and predictability, surpluses would be recycled within the group, fostering intra-BRICS demand, trade, and investment. This new set of institutions would then have incentives to

channel trade in a manner that strengthens these new institutions and generates real demand rather than engaging in financial speculation.

www.levyinstitute.org/pubs/pn_15_5.pdf

When a Rising Tide Sinks Most Boats: Trends in US Income Inequality

PAVLINA R. TCHERNEVA

Policy Note 2015/4, March 2015

Research Associate Pavlina R. Tcherneva contributes a follow-up to her earlier analysis in *Growth for Whom?* (One-Pager No. 47), offering a deeper look at trends in US income inequality during the postwar period. She examines the share of income captured by different income groups in economic expansions during this period, and finds that a dwindling share of the gains in income growth has gone to the bottom 90 percent of families. Equally troubling, the US economy has grown following the Great Recession and average real incomes have recovered to 2008 levels, but all of the growth in income was captured by the top 10 percent of families. Many Americans feel that they have not been part of “the recovery”; this analysis demonstrates that the recovery has lifted a few boats but the rest appear to be sinking. Tcherneva begins her analysis with a review of real average market income before taxes and transfers based on the data published by Thomas Piketty and Emmanuel Saez in 2015.

The author notes that a growing body of research has documented the rise in income inequality since the 1970s. Less well known is the vicious cycle of income inequality creating more income inequality. She observes that between 2009 and 2012 the top 1 percent of families captured 95 percent of all income growth and the top 0.01 percent captured 32 percent, or nearly a third of all income growth. Tcherneva examines income gains, including capital gains, during the postwar period. She finds that income inequality appears to have moderated among the wealthiest income groups based on 2013 data. This modest improvement appears to be the result of changes in the federal tax rates on high income brackets and capital gains. She demonstrates that this moderation is in fact a result of how the wealthiest households reported their income and masked continued growth in income inequality.

During this same period, the income of the bottom 99 percent either fell or stagnated. She suggests that a more reliable way to analyze income growth and capital gains is to annuitize the data.

Excluding capital gains income, between 2009 and 2013 the wealthiest 1 percent of American families captured more than 100 percent of the income growth. This means that the bottom 99 percent not only failed to benefit from income growth, but also actually lost income to the top 1 percent. The author notes that this same pattern is repeated for the top 10 percent of households, which saw their incomes rise at the expense of the bottom 90 percent. Surprisingly, the contribution of capital gains, though small as a share of total income, plays a pivotal role in raising the incomes of the bottom 99 percent. Without capital gains, the average income for the bottom 99 percent fell by \$127 between 2009 and 2013, while including capital gains led to a very modest \$451 increase in average real income. Tcherneva notes that the bottom 99 percent depend on these small capital gains, as their wages continue to shrink. In contrast, the rich saw their incomes rise with or without capital gains.

Tcherneva’s calculations reveal that increased income inequality has accompanied all of the expansions since the 1970s, with the majority of the income growth going to the wealthy. The author next offers two ways to analyze the income changes over economic cycles: over the business cycles (i.e., peak-to-peak) and across income cycles. The latter method allows her to analyze which groups recover their income first following a recession, and the extent to which they reclaim their previous income levels.

Both the business and income cycles show that after the 1970s, the wealthy captured most of the income growth in most economic cycles. The income cycle analysis shows that the wealthiest 10 percent captured between 78 and 107 percent of all income growth. Income growth among the wealthiest tended to turn around quickly, the author observes, whereas the income of the bottom 90 percent continued to fall.

Tcherneva attributes rising inequality to a shift in government policy away from pro-employment and pro-wage policies designed to promote shared prosperity. The United States, she concludes, should pursue chock-full employment and better wages for lower- and middle-income families. A return to a more equitable form of capitalism requires such steps as rolling back regressive tax policies, linking wage growth to productivity, pay equity, and the implementation of a meaningful

employment safety net at living wages for all. Overall, the United States must return to policies that ensure that the majority of economic gains reach the majority of US families. www.levyinstitute.org/pubs/pn_15_4.pdf

The Greek Public Debt Problem

MICHALIS NIKIFOROS, DIMITRI B. PAPADIMITRIOU, and
GENNARO ZEZZA

Policy Note 2015/2, February 2015

Research Scholar Michalis Nikiforos, Levy Institute President Dimitri B. Papadimitriou, and Research Scholar Gennaro Zezza argue for restructuring Greece's public debt as it is both unsustainable and an obstacle to the country's economic recovery. Furthermore, the current policy stance of the International Monetary Fund, the European Central Bank, and the European Commission—the troika—is, in their estimation, neither practical nor moral. For the sake of contrast and valuable lessons learned, they point to how Germany's postwar public and foreign debt was managed, and never repaid, as an example of how to resolve the debt crisis in Greece and Europe. However, addressing the structural weakness of the Greek economy and the broader structural imbalances in the eurozone pose far greater challenges.

The authors argue that Greece's debt must be restructured for the practical reason that it simply cannot be paid otherwise. Extending current policies aimed at creating large fiscal surpluses will only deepen the country's economic and social crisis. In addition, the debt overhang is itself an obstacle to recovery as it creates uncertainty and retards a recovery in private investment. Furthermore, under the conditions of the agreement in place in early 2015, Greece was obligated to devote its scarce resources to making debt payments rather than rebuilding its economy.

The troika has insisted that a combination of fiscal surpluses, rising exports, and a rebound in investment will bring Greece's debt-to-GDP ratio to 120 percent by 2022. While their formal accounting may be correct, the authors point out that these expectations are wishful thinking at best. The performance of the Greek and European economies in recent years offers ample proof that such a recovery, while possible for the likes of Singapore, is unrealistic. The authors ask, Where will

this rebound come from? Greece has recorded double-digit negative numbers for its gross fixed capital formation. Its GDP growth rate is -3.3 percent. And the recent improvements in net exports are largely a result of the recession driving down purchases of imported goods and a temporary expansion in petroleum-related exports.

The authors next take up the moral arguments used by Greece's creditors and austerity advocates to justify the current policy regime. These groups argue that the debt is a result of past excesses, corruption, tax evasion, dysfunctional government, and the like. The authors concede that aspects of this critique have merit. However, the salient point is that, today, insisting on full repayment fails the test of pragmatism. Ignoring the reality that Greece cannot under any plausible scenario repay its debts in full will not resolve the crisis. Instead, it would be more useful to address the structural issues still plaguing the eurozone and deal with the fact that the Greek crisis has been exacerbated because its debts are denominated in a foreign currency. If Greece had some form of monetary sovereignty, it would not face such dire circumstances. For example, if the European Central Bank were to guarantee the rollover of its existing debt, Greece would only have to worry about its current account.

The authors further suggest that if moral arguments are to be invoked, then the cost of default should be borne by both the creditor and the debtor. The use of a positive interest rate represents the existence of risk. Greece's creditors understood the notion of a return based on risk. Further, even if Greece could repay its debt in full and there were no structural imbalances in the design of the eurozone, can the sacrifice required by yet another round of austerity be morally justified?

John Maynard Keynes offered an answer to this question in *The Economic Consequences of the Peace*. Keynes strongly criticized the punitive terms of the Treaty of Versailles. He argued that demanding reparations beyond the capacity of a country to pay—at that time, Germany; today, Greece—would lead to the destruction of the debtor economy and therefore be in vain. Keynes also questioned the moral merits of the German reparations and suggested that political repercussions are likely to follow economic collapse. The authors note that history bore out Keynes's predictions: reparations bred economic hardship, which became the crèche of political extremism in the form of fascism and a second world war.

The authors note that a different path was taken following World War II. Germany, which today steadfastly opposes debt restructuring on principle, was itself the beneficiary of the largest debt restructuring deal in history. The authors provide a detailed discussion of the terms of Germany's debt forgiveness and economic reconstruction. In conclusion, they argue that Greece needs a bold cancellation of its public debt, and that the cancellation of German debt provides a template for how to proceed. However, as the postwar experience has shown, cancelling debt is not enough. There must also be a comprehensive plan to deal with the Greek economy and the underlying imbalances in the eurozone.

www.levyinstitute.org/pubs/pn_15_2.pdf

A Nonbehavioral Theory of Saving

MICHALIS NIKIFOROS

Working Paper No. 844, July 2015

Research Scholar Michalis Nikiforos presents a nonbehavioral theory of saving with which he identifies, using a financial balances approach, the household saving rate required to maintain full employment over time. In his model, the distribution of income is determined exogenously, and therefore requires an endogenous adjustment of the saving rate to maintain a constant growth rate. He begins his analysis with a discussion of the concept of “closure” in macroeconomic analysis, specifically in the work of Nicholas Kaldor and Luigi Pasinetti.

Nikiforos observes that given the rise of income inequality in recent decades, Kaldor's theory of distribution seems less convincing, as the “historical constancy” of income shares seems to be unravelling. However, he argues that the framework offered by Kaldor and Pasinetti remains useful for developing a strategy for analyzing how saving is determined across the income distribution in order to maintain full employment. This is a nonbehavioral theory of saving in the sense that it reveals how saving must respond to other forces, rather than a theory of the individual preference for saving per se. Nikiforos notes that Distinguished Scholar Wynne Godley made an important contribution to this same subject. However, Godley's implicit nonbehavioral saving theory focused on the private sector as a whole and did not take up distributional issues explicitly. In contrast, Nikiforos decomposes the household

sector into distributional classes, and unlike Kaldor and Pasinetti he uses the size distribution of income rather than the functional distribution of income in his analysis.

The author first presents a series of accounting relationships to clarify that a protracted negative net saving rate leads to rapid increases in debt-to-income ratios and declining net worth. He then reviews the evolution of the US economy in recent decades, drawing on Godley's work. Nikiforos next explains how a nonbehavioral theory of saving for the household sector provides the critical link between the household sector's balance sheet and the full employment growth rate, as well as the fiscal and current account balances. Based on this analysis, he demonstrates that the saving rate of the household sector is a function of the fiscal and current account deficits. Thus, Nikiforos shows that in the presence of increasing current account deficits and fiscal surpluses, continued full employment relies on a reduction in the saving rate of the household sector. This reduction implies an increase in the debt-to-income ratio and the net-worth-to-income ratio of the household sector, and is therefore unsustainable. This finding is clearly consistent with Godley's conclusions, though reached using a new analytical strategy.

Nikiforos next turns to an investigation of the bottom 90 percent and top 10 percent of the household income distribution. He shows that, all things being equal, an increase in income inequality necessitates a decrease in the saving rate of households at the bottom of the distribution.

Given these results, the origins of the Great Recession become clear. Prior to the crisis, the rise in income inequality, the deterioration of the external position of the US economy, and pervasive fiscal conservatism made full employment dependent upon a decrease in the saving rate of households, especially households at the bottom of the income distribution. This led to a dramatic increase in the debt-to-income ratio, which was sustained by an asset bubble (stock market and real estate). Once the household saving rate stopped falling and the asset bubble burst, the Great Recession was inevitable.

Seen through this lens, the “irrational” or “irresponsible” behavior of households at the bottom of the income distribution was necessary for the growth rate the US economy experienced in the three decades leading up to the Great Recession. Rising income inequality, the current account deficit, and the fiscally conservative stance of the public sector left the US

economy caught in a quandary between full employment based on an unsustainable process of rising household debt-to-income ratios, and low growth and high unemployment.

Nikiforos cautions that the US economy faces this same choice today. Going forward, economic policymakers must choose between another round of private sector expenditure or a protracted period of economic stagnation. The way out of this dilemma, the author concludes, is to relax the fiscal stance of the public sector and address the major structural challenges of the current economy: high income inequality and external deficits. www.levyinstitute.org/pubs/wp_844.pdf

Making the Euro Viable: The Euro Treasury Plan

JÖRG BIBOW

Working Paper No. 842, July 2015

Research Associate Jörg Bibow argues that the euro crisis remains unresolved and the currency union both incomplete and vulnerable. He proposes a Euro Treasury to serve as a rudimentary fiscal union (not a transfer union) in which contributions and benefits would be shared proportionately among member-states. His forward-looking plan does not propose mutualization of existing national debts. Rather, this new institution would issue common Euro Treasury bonds to fund the collective infrastructure needs of the union following existing rules. This approach would establish a common treasury, healing a basic flaw in the design of the euro; provide the public investment stimulus needed to end the crisis; and pave the way for further integration in the future. Bibow begins his proposal with a review of the flaws in the euro regime as exposed by the euro crisis.

The author notes that the absence of a treasury partner left the European Central Bank (ECB) in the difficult position of attempting to stem the spread of an area-wide contagion while exposing itself to legal challenges. Today, the euro currency regime continues to struggle against economic stagnation, high unemployment, and adverse debt dynamics. Likewise, investment spending, both public and private, remains depressed under the limitations imposed by the Stability and Growth Pact and Fiscal Compact. The eurozone, Bibow argues, has collectively engaged in austerity, much to the detriment of its economic recovery, social well-being, and long-term growth

prospects. Current government policies are undermining economic life and limiting the economic possibilities of future generations.

Bibow next lays out his proposal for a Euro Treasury. While others have made similar proposals, his plan is distinct in the way it connects the spending and financing sides of the recovery program, which also serves to address an important deficiency in the current euro regime: the decoupling of central bank and treasury institutions. Without a Euro Treasury partner and the debt it could issue, the ECB is vulnerable to legal challenges to its policies, and national treasuries are subject to default and therefore bank runs.

The core of Bibow's proposal is to create a vehicle to pool future eurozone public investment spending, and to fund this spending with eurozone treasury securities. Member governments would set the level of area-wide investment and the annual growth rate of public investment. Over time, this would create a common European infrastructure stock as well as common debt. The author is careful to point out that this is not a "eurobonds" scheme, as it does not include the mutualization of existing national debt. Under his plan, member-states would continue to be responsible for their individual debt obligations and the no-bailout clause would remain in force. The Euro Treasury would provide investment grants to member-states in line with their GDP shares or based on the ECB's capital key. Importantly, this proposal is decidedly not a transfer union. Furthermore, consistent with the European Union's subsidiarity principle, the Euro Treasury's power to tax would be strictly limited to collecting revenues sufficient to service the interest on the debt and maintain a target debt ratio. The proposal operates on the basis of a strict rule, and there would be no discretion for fiscal decision making aside from setting the initial goals. Member-states would abide by all of the current rules of the euro regime, but only with regard to current public expenditures; national public capital expenditures would be managed under a capital budget funded by common Euro Treasury securities.

The author's proposal would create a central fiscal authority with the power to spend, tax, and issue debt, advancing the goal of integration while also providing a common safe asset. It would also increase public investment to a level more consistent with Europe's development needs, strengthening the euro as a vehicle for joint prosperity. In terms of economic

recovery, Bibow argues that his proposal would create greater fiscal space for national governments to manage their debt and allow member-states' automatic stabilizers to function. And, a Euro Treasury would provide the means for responding to common or symmetric shocks more effectively, which would increase confidence and stability, as the eurozone would have a more effective backstop for its financial system. The Euro Treasury could also be used to combat asymmetric shocks and as a conduit for mutual insurance.

Overall, a Euro Treasury would provide both direct and indirect support for economic recovery in the short term, increasing public investment above current levels and expanding fiscal space for debt management and other purposes at the national level. It would also foster rebalancing within the eurozone and bring Europe one step closer to realizing the euro project.

www.levyinstitute.org/pubs/wp_842.pdf

The Effects of a Euro Exit on Growth, Employment, and Wages

RICCARDO REALFONZO and ANGELANTONIO VISCIONE
Working Paper No. 840, July 2015

Riccardo Realfonzo and Angelantonio Viscione, University of Sannio, examine the possible consequences of an exit from the euro. Their analysis avoids the competing ideological arguments as to what a rupture in the monetary union could mean for an individual country and focuses on the historical evidence from past currency crises that involved large devaluations. In this manner, the authors analyze the real impacts of crises in terms of the commercial balance, growth, employment, and real wages.

Their analysis includes 28 countries that experienced a currency devaluation of more than 25 percent against the US dollar that involved abandoning the previous exchange system. Of this total, seven countries have high per capita income (e.g., Finland, Spain, and Italy) and 21 countries have low per capita income (e.g., Argentina, Peru, and Turkey). The authors first examine the impact of inflation on the positive results of devaluation by comparing the difference between inflation in the United States and each of the countries studied. They observe an average depreciation against the dollar of 558 per-

cent. However, in high-income countries the decline was approximately 32 percent. The authors note that, relative to the US inflation rate, depreciation increased average inflation for these 28 countries by 58 percent in the first year, and within just two years the average inflation rate reached 450 percent. This increase in inflation effectively eliminated 80 percent of the competitive advantage associated with devaluation. However, high-income countries showed only a 6 percent increase in the first year and a less than 16 percent increase by the third year, wiping out 50 percent of the advantages of devaluation within two years. In addition, there is substantial variation among high-income countries, with some countries (e.g., Finland, Korea, and Sweden) showing no significant increase in inflation levels relative to the United States despite a 25 percent decline in the value of their currency against the dollar. However, in some cases there was only a small increase in inflation, while in others there was a marked increase in inflation.

Devaluation, or leaving the euro, is expected to increase exports and reduce imports, and thus improve the commercial balance (i.e., exports minus imports). An improved commercial balance is expected to increase growth rates following currency devaluation. Comparing each country's average commercial balance to its GDP in the years before and after the relevant currency crisis the authors find that low-income countries did not benefit greatly from devaluation, as their commercial balances did not change dramatically. However, nearly all high-income countries showed clear improvement in their commercial balance. Again, the results show a distinct difference in the benefits of devaluation for high- and low-income countries.

Most high-income countries showed an appreciable increase in their growth rates as a result of improvements in their commercial balance. Taken as a whole, unemployment rates fell by one percentage point within three years in the 28 countries analyzed. However, these declines in unemployment were limited to low-income countries. Most high-income countries saw virtually no change in their unemployment rates. The authors infer from these results that high-income countries pursued greater use of industrial capital and labor to achieve growth following currency crises. Here again, among high-income countries there is considerable variation, suggesting that institutional factors and economic policies play important roles.

Wage deflation emerges as the most important impact following devaluation. Based on an examination of real wages

and the wage share of workers in all 28 countries, the authors determine that there is an average drop in both measures and that inflationary processes lead to a redistribution of wages to profits and rents. They also find that there is a massive redistribution effect following currency devaluation in both high- and low- income countries. The authors conclude that a euro exit could have short- and medium-term benefits but that inflation is likely to erode the initial competitive benefits. Furthermore, they argue that it is critical that real wages and the wage share receive protection, lest domestic demand decline. Thus, based on their analysis of past currency crises, the result of exiting or staying in the euro depends heavily on the economic policy choices that frame either course.

www.levyinstitute.org/pubs/wp_840.pdf

Program: Monetary Policy and Financial Structure

Emerging Market Economies and the Reform of the International Financial Architecture: Back to the Future

JAN KREGEL

Public Policy Brief No. 139, February 2015

Senior Scholar and Director of Research Jan Kregel explores alternatives for reforming the international financial system and argues for a hybrid system that would combine John Maynard Keynes's idea of a clearing union with the recent proposal for regionally governed financial institutions. This approach would effectively end currency wars and exchange rate volatility, reduce concerns regarding international capital flows, remove the need for an international lender or bank, and enhance the autonomy of governments of emerging market countries. Kregel begins his analysis with a discussion of the criticisms of and alternatives to the current international financial architecture.

He notes that the response of developed countries to the most recent global financial crisis resulted in widespread criticism of the international financial system; most vocally, from emerging market countries. The extraordinary actions

taken by developed-country central banks led to "currency wars," and the prospect of ending these extraordinary policies introduced greater exchange rate volatility and capital flow reversals. Some have called for increased policy coordination and cooperation, while others advocate an outright end to the dollar as the global reserve currency. China and Russia, for example, have called for replacing the US dollar with the International Monetary Fund's Special Drawing Rights (SDRs).

Kregel observes that policy coordination has little historical evidence to suggest that it is an effective means to foster stability in the international financial system. In some cases, monetary policy coordination has had unintended, negative effects (e.g., the 1929 stock market crash, Black Monday in 1987, the 1989 Japanese market break, etc.). A clear problem of coordination as it has been practiced in the past is that it tends to focus on monetary policy, leaving fiscal policy coordination out of the picture. Kregel finds that there is little reason to expect that domestic monetary policies are likely to fully account for their impact on other countries going forward, or to be reconfigured to provide mutually beneficial results.

The problems associated with using a single national currency as the global reserve currency in a stable exchange rate system are well documented. Proponents of replacing the US dollar with a new international reserve currency seem to assume that such a change would lead to policy coordination, as was expected under a freely convertible gold standard. However, it is difficult to see how a new international reserve currency would differ from the gold standard.

Keynes observed that coordination under the gold standard was neither equitable nor stabilizing, as it placed the burden of adjustment on the debtor country. Destabilization is inherent in any system based on an international standard. An international standard also has undesirable consequences for foreign lending (movement of capital funds, especially capital flows from debtor to creditor countries). Kregel notes that the euro has provided ample evidence that a single interregional currency does not prevent financial instability. Replacing the dollar with SDRs or a new international reserve currency would likely fare no better.

The author next discusses Keynes's proposals for international monetary reform in the postwar period. Keynes sought to avoid the problems created by German reparation payments following World War I. From this experience, Keynes arrived at

two fundamental principles: reparations can be met using exports but not fiscal surpluses or transfers; and exports will only work if the importing country is willing to accept an external deficit. To these, Keynes added the banking principle (i.e., the correspondence of debits and credits, assets and liabilities within a single, closed bank). This became the central element of his clearing union proposal, under which credits would be made available to debtor countries to spend. This proposal, Kregel explains, was predicated on the idea that financial stability required a balance between exports and imports. Also, a clearing union has the advantage of being multilateral, and can avoid problems such as blocked balances.

Turning to recent reform proposals, Kregel argues that none of them fully address the concerns of emerging economies. It is the structure of the financial system itself, he suggests, that must be changed. Specifically, a regionally based version of the clearing union with a notional unit of account is more likely to succeed than adopting a regional currency. Under such a clearing union, national governments would retain monetary sovereignty, as all payments and debts are expressed in their national currency—thus preserving independence in national policy. If emerging market economies are to join the ranks of developed countries, Kregel concludes, they must use what economic and political influence they have to promote a radical change in the international financial system. Regional clearing unions are an important and viable step forward on this path.

www.levyinstitute.org/pubs/ppb_139.pdf

These ideas are explored in greater detail in a working paper by the same author, published as Emerging Markets and the International Financial Architecture: A Blueprint for Reform, Working Paper No. 833, February 2015, www.levyinstitute.org/pubs/wp_833.pdf.

Europe at the Crossroads: Financial Fragility and the Survival of the Single Currency

JAN KREGEL

Policy Note 2015/1, February 2015

Germany's intransigent refusal to restructure Greece's debt or reduce its requirements for additional austerity seems to defy all economic logic. However, Germany's intentions become quite clear if seen in the light of its overriding priority: establishing the political integration it has always seen as essential, ideally a precondition, to the monetary union. In this policy note, Senior Scholar and Director of Research Jan Kregel argues that Germany's preference for austerity is a strategy to advance its agenda of greater political union in Europe, and Greece is being made an example. Whether austerity can lead to greater political integration is a matter for debate, but the current policy regime is not sustainable. The survival of the euro, in the absence of deeper political integration, requires Europe either to adopt policies that will lead to economic stagnation, or to maintain what the late Distinguished Scholar Hyman P. Minsky referred to as a Ponzi finance scheme—two alternatives that are economically and politically unsustainable.

Kregel begins with a brief historical survey of European unification efforts. He observes that two competing approaches to unification have dominated this story, which can be roughly divided into the "structuralists" and the "economists." The structuralist strategy is one of creating appropriate institutions that would eventually lead member-states to adapt their behavior to these structures. The economists have argued for the use of market processes to produce real economic convergence. The author recalls that following a number of halting steps to achieve integration Europe turned its attention to monetary integration. Under the Maastricht Treaty, monetary integration outpaced political unification. And, as history has shown, the gap between monetary and political unification eventually returned to haunt Europe as it struggled to resolve its sovereign debt crisis. As a result, Greece has become a pawn in a larger European contest over the degree of political unification and the centralization of powers.

Kregel recalls that the Bundesbank position on the need for political unification as a prerequisite for a single currency has been clear for decades. Indeed, Germany's arguments were made evident during the integration of East and West Germany.

It was, he suggests, the lack of explicit political integration that prompted Germany to include measures limiting the size of government budgets in various European Union (EU) treaties; notably, the Maastricht Treaty's Article 104. These provisions have served as substitutes for the political integration Germany sought. The Stability and Growth Pact and "six-pack" provisions, for example, can be seen as a means to impose fiscal sustainability in the absence of strong central control.

The German approach is that the euro operates as a fixed exchange rate system with no possibility of a change in parity. Under this system, sovereign debt becomes no different than private sector debt. Avoiding government default and the integrity of the euro therefore requires maintaining an iron-clad fiscal balance in the style of German policymakers. Thus, Germany refuses to grant debt reduction to Greece until it adopts strict fiscal balance, and demands that the EU accept deeper political integration going forward. Greece, in Kregel's estimation, has become the poster child for German fiscal discipline. As long as Greece threatens to disobey and to leave the euro, Germany's stance on greater political integration and centralized control based on its own policies will only become more entrenched.

Paradoxically, the German prescription that seems to have served its interests so well is doomed to fail. Applying Minsky's work on financial instability and using a financial balances approach, Kregel notes that in a closed system both the public and private sectors cannot be in a hedge position simultaneously, unless the external sector makes up the difference in the form of a continuous current account surplus. The survival of the euro thus relies on the entire EU having an external surplus. This implies that financial fragility, deficit spending, and the like would reside in the external sector (i.e., the United States). Kregel next presents these same ideas graphically, drawing upon the work of Research Associate Robert Parenteau. This presentation illustrates a paradox: the policies proposed to generate income and create fiscal surpluses in Greece have a negative impact on income growth. In the end, Kregel concludes, German stratagems for greater political control and integration will be in vain if the European project collapses under the political weight of unrelenting economic stagnation. www.levyinstitute.org/pubs/pn_15_1.pdf

Inside Money in a Kaldor-Kalecki-Steindl Fiscal Policy Model: The Unit of Account, Inflation, Leverage, and Financial Fragility

GREG HANNNGEN and TAI YOUNG-TAFT

Working Paper No. 839, June 2015

Research Scholars Greg Hannsgen and Tai Young-Taft propose a strategy to model financial fragility and money in a way that is faithful to several of the central elements of Hyman P. Minsky's financial fragility hypothesis. Their aim is to propose an approach to modeling the effects of fiscal policy in a dynamical setting. The authors' novel and perhaps unique approach to modeling Minsky's hypothesis employs a psychological variable called "financial prudence," which declines over time following a financial crash and drives a cyclical buildup of leverage in household balance sheets. High leverage or a low safe-asset ratio in turn creates a greater degree of financial fragility.

Hannsgen and Young-Taft demonstrate how the pathways of financial fragility and capacity utilization determine the probabilistic risk of a crash in any time interval, and explain how these crashes entail discrete downward jumps in stock prices and financial sector assets and liabilities. To the endogenous government liabilities explored by Hannsgen previously, the authors add common stock and bank loans and deposits. In two alternative versions of the model's wage-price module (i.e., wage-Phillips curve and chartalist, respectively), the rate of wage inflation depends on either unemployment or the wage-setting policies of the government sector. In addition, at any given time, goods prices also depend on endogenous markups and labor productivity variables; goods inflation affects aggregate demand through its impact on the value of assets and debts; and bank rates depend on an endogenous markup of their own. Furthermore, in light of the limited carbon budget of humankind over a 50-year horizon, goods production in this model consumes fossil fuels and generates greenhouse gases.

In terms of the public sector, the government produces at a rate given by a reaction function that pulls government activity toward levels prescribed by a fiscal policy rule. The subcategories of government spending affect the tempo of technical progress and prudence in lending practices. Ultimately, the authors' intention is to examine the effects of

fiscal policy reaction functions, including dual unemployment rate and public production targets, and to test their effects on numerically computed solution pathways. The results of their analysis show that (1) the model has no equilibrium (steady state) for reasons related to Minsky's argument that modern capitalist economies possess a property that he called "the instability of stability"; and (2) solution pathways exist and are unique, given vectors of initial conditions and parameter values and realizations of the Poisson model of financial crises.

In conclusion, the authors' simulations provide a means to explore the comparative dynamics of their model. They note that detailed functional forms are in some instances absent from their treatment. However, they suggest that future work might include varying the particular financial indicator used in the investment function. Furthermore, a variety of taxes, including wealth taxes, taxes that differ across types of income, and inflation taxes, could be analyzed by including appropriate parameters in the model and changing the accounting identities as needed. The model is also suitable for policy exercises using computable document formats.

www.levyinstitute.org/pubs/wp_839.pdf

Financing the Capital Development of the Economy: A Keynes-Schumpeter-Minsky Synthesis

MARIANA MAZZUCATO and L. RANDALL WRAY

Working Paper No. 837, May 2015

Mariana Mazzucato, University of Sussex, and Senior Scholar L. Randall Wray examine the role of finance in the capital development of the economy, with emphasis on the United States and UK. Their analysis focuses on the period following World War II, during which the financial sector underwent a rapid and profound transformation in both its scope and role in the economy. The authors provide a brief synthesis of the relevant contributions of John Maynard Keynes, Joseph Schumpeter, and Hyman P. Minsky to develop a framework for their analysis. Within this context, they then discuss the role of finance in innovation, emphasizing the concepts of mission-oriented finance and noting the flaws in market failure theory. The authors conclude with proposals to reform the financial system to support innovation, building on the work of Minsky and Schumpeter. At the center of their proposal is

the need for an entrepreneurial state—a government that plays an active role to align public priorities with long-term commitments to innovation, capital development, and growth that is both smart and inclusive.

The postwar period saw the transformation of a financial system dominated by closely regulated and chartered commercial banks to one that came to be dominated by financial markets. The rise of the financial sector over the nonfinancial sector came as a result of finance pouring into the financial sector rather than into the capital development of the economy. As a result, the economy suffered, although not in all sectors. Public and private infrastructure was neglected in the United States and UK, leaving an estimated \$3.6 trillion in unmet infrastructure needs in the United States alone.

Capital development, the authors explain, advances in two ways: improving the quality and quantity of investments, and funding innovation. Innovation, they observe, has become the key to long-term growth, and finance is essential to supporting innovation. They argue that there is a pressing need to restructure finance to serve the real economy and support innovation-led growth and full employment. The framework for their approach relies on the work of Keynes, Schumpeter, and Minsky as well as an understanding of the role of government that goes well beyond fixing static market failures.

Schumpeter focused on the need to understand the innovation process and, based on this understanding, the identification of appropriate types of finance to support innovation. Keynes provides the theory of effective demand, and insights regarding the importance of capital development, and that it not be left to casino-like processes. Minsky contributes the recognition that capitalist systems are not inherently stable, and that when finance is brought into the analysis, the dynamics become destabilizing. Minsky observed that the sources of finance matter, and offered an alternative to the loanable funds theory that Keynes had rejected. Minsky also argued that finance was itself subject to innovation, and that stability was destabilizing. The authors note that, unlike Schumpeter, Minsky did not see the banker as merely the ephor of capitalism, but as an important potential source of instability.

The authors' discussion of the relationship between finance and innovation identifies a number of weaknesses in private sector-funded innovation. For example, venture capitalists are often too risk averse for the patient, long-term, and

committed finance required to support innovation. Mazzucato and Wray argue for the need for long-term, directed, mission-oriented finance, noting that the public sector has long played a role in providing this kind of finance. State investment banks (SIBs) are an example of a public institution that has demonstrated its ability to fill the finance void left by risk-averse private investors. Increasingly, SIBs are on the cutting edge of innovation, and play four distinct roles (countercyclical, developmental, venture capitalist, and mission-oriented) in supporting it.

The authors also provide a detailed analysis of the failure of orthodox, mainstream economics to identify the shortcomings of the current financial system or deal with issues in innovation. Mazzucato and Wray offer an alternative view of the role of financial institutions and propose measures to realign the financial system along Schumpeterian/Minskyan lines. Their recommendations focus on the broad areas of reforming commercial banking to make it simple, safe, and small, and renovating the financial system to support innovation. Finally, the authors embrace a positive role for government in the form of an active entrepreneurial state that pursues long-term goals that serve public purposes, rather than a passive role relegated to tweaking markets.

www.levyinstitute.org/pubs/wp_837.pdf

Does Keynesian Theory Explain Indian Government Bond Yields?

TANWEER AKRAM and ANUPAM DAS

Working Paper No. 834, March 2015

Tanweer Akram, Voya Investment Management, and Anupam Das, Mount Royal University, examine the impacts of short-term interest rates on long-term interest rates in an emerging economy such as India. John Maynard Keynes observed that short-term realities drive investors' long-term expectations, but he was referring to developed countries. Akram and Das set out to test Keynes's observation using data from India. The authors also examine whether fiscal deficits raise long-term interest rates in India. They begin their analysis with a detailed discussion of Keynes's views on the drivers of long-term rates in a world of ontological uncertainty. They then provide a survey of securities issued by the Indian government and of the

Indian bond market. The authors then present several models of long-term interest rates and of changes in long-term rates informed by Keynes's views, as well as the data and relevant methodological concerns. They conclude with the results of their empirical analysis.

Keynes remarked that the connection between short-term and long-term rates is stronger than many expect. This may be surprising from a technical standpoint, but Keynes argued that there was clear historical evidence of this relation (such as the findings of Winfield Riefler). He also argued that the connection was a result of ontological uncertainty and the behaviors or strategies that market participants adopt in their pursuit of profits. The authors note that while this view is at odds with the Lucasian notion of rational expectations, it does not fall so very far afield of more nuanced treatments of economic rationality, such as would be found in the work of Kenneth Arrow. Further, the bounded rationality and behavioral economics literature shows that investors' expectations are often grounded in such things as recent events rather than on mathematical expectations. All of which serves to support Keynes's observation. The authors then turn to the specific case of India and the evolution of short- and long-term interest rates. As a sovereign issuer of its own currency, India is always able to meet its debt obligations, and the Reserve Bank of India (RBI) conducts a variety of operations to sustain its monetary policy stance.

The authors briefly review a variety of financial instruments and operations of the Indian government and the RBI. They then introduce an ordinary least squares (OLS) model of long-term interest rates and changes in long-term interest rates. The model is based on the proposition that long-term government bond yields are a function of short-term interest rates and forward interest rates. The current rate of inflation and the current level of economic activity are also included in the model, reflecting the Keynesian notion that the near-term view is almost always a key determinant of long-term expectations. They present three sets of equations to identify the determinants of changes in the long-term nominal yields of Indian government bonds.

The initial OLS results support the hypothesis that percentage point changes in the short-term interest rates, year over year, are the key driver of changes in Indian government bond nominal yields. Due to the possibility of endogeneity between long-term government bond yields, short-term interest rates,

and the rate of inflation, the authors apply a two-step feasible and efficient generalized method of moments (GMM) technique to further inspect their initial results. The GMM estimation is performed for a number of time periods (e.g., monthly, quarterly, six-month tenors, etc.). The monthly results confirm that short-term interest rates strongly influence the nominal yields of long-term Indian government bonds. The results also show that these same yields are fairly sensitive to changes in the growth of industrial production but relatively insensitive to changes in inflation. The quarterly models show that the fiscal deficits do not raise Indian government bonds' nominal yields, contrary to the accepted wisdom of the mainstream literature.

The findings reported in this paper suggest that Keynes's observations about the determinants of long-term interest rates are indeed valid for an emerging economy such as India. Thus, monetary sovereignty provides the policy space for the RBI to use short-term rates and for the Indian government to meet its debt obligations issued in Indian rupees. While inflation and the growth rate are shown to affect government bond yields, larger fiscal deficits were not found to increase long-term yields.

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The Rise of Money and Class Society: The Contributions of John F. Henry

ALLA SEMENOVA and L. RANDALL WRAY

Working Paper No 832, February 2015

Alla Semenova, State University of New York, Potsdam, and Senior Scholar L. Randall Wray examine the rise of money and social inequality in ancient Greece and Egypt. Drawing on the work of several of the most important contributors to the chartalist tradition, they explore the social foundations of money in two early societies. Building upon this foundation, they propose a pro-social goal for money, as articulated by Modern Money Theory (MMT). They begin with a brief survey of the major differences between the orthodox metalist and heterodox chartalist approaches to money.

Metalism, the authors explain, views money as a spontaneous solution of private sector markets to the problem of inefficient barter transactions. Money arises as a commodity

whose value is linked to its scarcity, and market exchanges take place under conditions of classless, free, equality among the participants. In contrast, chartalism relies on an evolutionary understanding of money and highlights the role played by social and political authority (i.e., the state). Money is introduced by the state as a unit of account. Thus, money reflects the exercise of power by those who are able to impose obligations and/or debts over those who must pay them.

The authors then trace the contributions of some of the foundational chartalist thinkers. They begin with the contributions of Georg Friedrich Knapp, whose state theory of money highlighted the inseparability of the institutions of money and the state. A. Mitchell Innes later advanced a state theory of money and the credit money approach, which underscored the close relationship between money, debt, public authority, and religion. Philip Grierson's work on the history of money addressed similar issues in his treatment of the concept of *wergeld* and the emergence of an abstract unit of account. *Wergeld* was later transformed into standardized payments to authorities, and money emerged as a unit of account. Finally, Geoffrey Ingham provides a perspective on money as a unit of account for the assessment of social and political obligations. In his view, money is a system of relations based on underlying power relations and social norms.

Semenova and Wray then present a historical analysis of the coevolution of money and inequality in ancient Greece and Lydia. They highlight the importance of ritualized communal sacrificial meals as the most important redistributive activity. These activities were highly egalitarian, but they reflected a principle of proportionate rather than absolute equality. The existing social hierarchies and economic disparities were masked by activities that gave the appearance of harmony and consensual social relations. Importantly, these practices were grounded in religious traditions and social norms, not the market.

The authors find that coinage came into existence as citizens sought to displace the power of the aristocratic class. Coins—chartal money—were used as a substitute for the sacrificial portions provided under the traditional system. Thus, coinage was a solution to a crisis in distributive justice and closely linked to the formation of the *polis* (i.e., state) over a long period of time. In terms of usage, coins were first used as tokens of “gift giving,” and as a means to establish citizen rights

through their possession. They were later used for payment of personal services and eventually in transactions for goods, though the precise evolution of money transactions is unclear. It is important to note that status as a citizen was limited to a small portion of the male population—the majority of people were initially excluded from the possession of coins.

The authors next discuss Senior Scholar John F. Henry's writings on the evolution of money and class society in ancient Egypt. The historical pattern in Egypt is similar to that of ancient Greece with regard to the development of social strata, the role of religion in early nonegalitarian societies, and the shift in the substance of social obligations, which is similar to the shift from totemism to state religion. Henry's analysis shows how inequality rose as an accident of history rather than history's natural progression.

Having described the historical, chartalist foundations of MMT, the authors reiterate: money is the creation of a state, government spending is not constrained by some material limit (like tax revenues), and government spending precedes the receipt of revenues. Historically and today, government spending arises out of political will, just as coinage arose out of a social context. As was seen during the period of Keynesian economic policies (1947–75), money was used for the public good. The authors suggest that a well-functioning democracy has the power to subvert the inequality-inducing qualities of money and harness it for the benefit of the majority of society. www.levyinstitute.org/pubs/wp_832.pdf

Program: The Distribution of Income and Wealth

A Decade of Declining Wages: From Bad to Worse

FERNANDO RIOS-AVILA

Policy Note 2015/3, March 2015

Research Scholar Fernando Rios-Avila examines the evolution in real average wages for US full-time workers between 1994 and 2013. Building on an earlier study (Policy Note 2014/4, *A Decade of Flat Wages?*) in which it was found that average real wages were stagnant or declining, this policy note examines

wage trends across demographic groups (wage level, age/experience, and education). He finds that after a more or less cohesive development of wages prior to 2002–3, a divergence in real wages has taken hold among different demographic groups. He begins his analysis with a discussion of demographic trends in the United States between 1994 and 2013.

The US population was, on average older/more experienced and better educated in 2013 than in 1994. As a share of full-time workers, the number of older workers and people with a high school diploma grew during this period. In particular, the growing share of older workers served to push up wages and reduce turnover in the job market. Workers aged 55 to 64 saw increases in employment that far outpaced their growth in the general population.

In contrast, during this same period, younger workers (ages 25–34) fell as a percentage of the full-time workforce, from 36.2 percent in 1994 to 28.9 percent in 2013, mirroring their decline in the population at large. However, this group of workers also showed the largest nominal increase in unemployment, reflecting the difficulty they faced in finding work.

Turning to the trends in wages by wage earner group, Rios-Avila notes that there was a fairly cohesive development of wages until 2002–3, after which wage levels began to diverge. For example, the majority of wage earners saw their wage growth peak in 2002–3, after which wages declined between 2 percent and 6 percent by 2013. However, the top 10 percent of wage earners actually saw their wages increase during this period. Controlling for structural changes in the labor force, the author finds that more than 50 percent of the population experienced a decline in real hourly wages.

Wages also varied significantly by age group. Workers aged 44 and younger saw significant declines in real wages after 2002, with the youngest group (ages 25–34) experiencing the sharpest declines. Rios-Avila notes that the only age group to see an increase in average real wages was full-time workers aged 55–64.

Wages by education group, again controlled for structural changes in the labor force, also saw a broadly shared development until 2002–3. However, after 2003, wages evolved at different rates for the various demographic groups. It is important to note that wages declined for all educational attainment groups after 2003, but that the declines were not uniform or proportionate. Full-time workers saw the largest

gains in their wages prior to the recession of 2001, only to lose much of this ground in the succeeding 12 years. However, the declines for workers with a four-year degree or more did not fall as rapidly or as far as less-educated groups. For example, full-time workers with less than a college degree experienced a 6 percent decline, such that their real wages in 2013 were lower than in 1994.

The results of this analysis are grim. Nearly two-thirds of full-time wage earners have less than a college degree and have seen their wages decline to below 1994 levels; workers aged 44 and younger (roughly 71 percent of full-time US wage earners) experienced falling real wages after 2002; and the bottom 75 percent of the wage distribution experienced real losses in cumulative wage growth, while the top 10 percent saw their wages increase during the same period. Older/more experienced, higher-earning, and better-educated workers saw slower growth in their wages or real increases in their wages during this same period. They represent a relatively small share of full-time workers. However, it is their wage growth as a group that masks the much larger declines in real wages that would have occurred without them.

In conclusion, Rios-Avila suggests that this weak growth in real wages appears to be both a cause and an effect of the weak US recovery. In the absence of an employer-of-last-resort or similar labor market policy, he suggests federal and state governments focus on raising real wages through such measures as progressive tax policy, increasing the minimum wage, enforcing overtime pay laws, and creating opportunities for the most vulnerable workers.

www.levyinstitute.org/pubs/pn_15_3.pdf

On the Determinants of Changes in Wage Inequality in Bolivia

GUSTAVO CANAVIRE-BACARREZA and

FERNANDO RIOS-AVILA

Working Paper No. 835, March 2015

Gustavo Canavire-Bacarreza, Universidad EAFIT, and Research Scholar Fernando Rios-Avila investigate the factors driving changes in wage inequality in Bolivia since 2000. Prompted by a series of economic and political transformations that have altered the Bolivian labor market, particularly for urban salary

workers, the authors apply an intertemporal decomposition method to investigate the roots of declining inequality and rising wages. They find that most of the growth has come from rising real wages at the bottom of the wage distribution, while wages for more highly educated workers appear to have stagnated. They begin their investigation with a discussion of the relevant literature of wage inequality.

The authors observe that the current literature offers several explanations for declining wage inequality in countries similar to Bolivia. These include improvements in the macroeconomic environment for developing countries; the establishment of better, larger conditional cash transfer programs; changes in the structure of the labor market; and a reduction of gender and/or race wage gaps. Canavire-Bacarreza and Rios-Avila note that labor markets play a key role in income inequality in Bolivia, as wages account for 87 percent of the average Bolivian household's income. They argue that changes in the job market are central to understanding wage inequality in Bolivia. For example, increased public sector employment has led to a higher level of employment despite lagging private sector job creation. Also, as an exporter of natural gas, Bolivia has benefitted from rising energy prices, which have had knock-on effects for incomes and the economy; and finally, the Bolivian government has launched an aggressive suite of policies intended to drive up wages at the bottom of the income distribution.

Canavire-Bacarreza and Rios-Avila use household survey data from 2000–12 gathered by the Bolivian National Institute of Statistics to analyze wages and their distribution among salaried workers. To create a more comparable sample across years, they restrict their sample to persons between the ages of 15 and 65 who are employed as wage or salary workers. They also restrict the sample to workers in urban areas in order to avoid the volatility associated with the rural labor markets. They apply a generalization of the Oaxaca-Blinder decomposition to analyze the impact of different factors on the wage distribution during this period. Their analysis yields four major findings.

The authors find that changes in the demographic composition and labor market account for a very small portion of the observed decline in income inequality during 2000–12. Most of the decline in wage inequality is explained by relatively more rapid growth in the bottom of the wage distribution

after 2006, as compared to growth in the higher segments of the distribution during the same period. Using a decomposition of the wage structure, they find that there has been a reduction in the returns to education and changes in the occupational and industrial structure of the labor market, which have been the main factors driving the decline in wage inequality. For example, the wages paid to workers in traditionally high-paying occupations have declined, further contributing to the decline in wage inequality. And lastly, a large portion of the decline in wage inequality remains unexplained. This unexplained portion may be linked to increases in the minimum wage or other factors unaccounted for in their analysis. However, Canavire-Bacarreza and Rios-Avila caution that if rising wages are not the result of changes in the returns to worker characteristics but a result of short-term economic policy interventions, then the reduction in wage inequality may be fragile.

In conclusion, the authors question the long-term sustainability of these changes given that the increase in wages does not appear to be rooted in structural factors typically associated with increased worker productivity, such as education. Further, declining returns to education could contribute to a flight of talent (i.e., emigration) over time. Thus, it remains to be seen if the Bolivian experiment will prove to be durable.

www.levyinstitute.org/pubs/wp_835.pdf

Program: Gender Equality and the Economy

Unpaid Work and the Economy: Linkages and Their Implications

INDIRA HIRWAY

Working Paper No. 838, May 2015

Research Associate Indira Hirway argues that the exclusion of unpaid work from the system of national accounts (SNA) is neither logical nor valid, and reflects the dominance of patriarchal values in macroeconomics. Further, unpaid work, such as providing care for household members, is disproportionately performed by women, and if one combines the paid and

unpaid work performed by individuals, women shoulder a greater burden of total work than men. This unequal distribution of work is unjust and represents a basic violation of human rights.

Hirway begins by mapping the links between unpaid work and the economy. She then discusses two strategies for integrating unpaid work: the valuation of unpaid work in satellite accounts, and the triple “R” approach of recognition, reduction, and reorganization of unpaid work.

Unpaid work is defined as work performed without remuneration, and may fall within or outside the production boundary of the SNA. Unpaid work that is part of the conventional economy, and thus should be included in the SNA, includes such things as working in a family business and the production of subsistence goods for personal or household consumption. Unpaid work that falls outside the SNA production boundary includes such activities as household maintenance, care work, and unpaid voluntary services. Hirway reports that this work represents between 35 percent and 50 percent of total work time in economies—work that is overwhelmingly performed by women and is not included in the SNA. This type of unpaid work is the focus of her analysis.

The author notes that there are several varieties of unpaid work currently included in the SNA but that the production of services for “own final consumption within the household” is excluded, as are voluntary unpaid services. Unpaid care work is a primary example of work that is essential to an economy, especially in countries where basic care infrastructure is lacking. Unpaid care work is clearly a productive activity and is essential to human capital formation. Indeed, without this form of work, children would not be nurtured and workers would not be able to return to work. Yet this type of work remains unequally distributed between men and women, is largely invisible to policymakers, and relegates a large portion of the population (i.e., women engaged in this type of unpaid work) to low-productivity, inferior work. The author notes that this is especially a concern in developing countries, where unpaid work is used to fulfill household overhead tasks in the absence of basic infrastructure. This burden falls almost entirely on women because of patriarchal traditions and values, and thus perpetuates gender inequality.

Hirway observes that the definition of unpaid work has changed over time, and could be changed again. The current

arguments for excluding the type of work outlined above focus on objections that nonmonetary flows are not sufficiently relevant to macroeconomics, including this type of work would overwhelm the system of national accounts, and the inclusion of this type of work would imply full employment of the population. The author refutes each of these objections in turn. She then argues that unpaid work is clearly relevant to the macroeconomy and therefore must not be excluded from the SNA regardless of its impact. Instead, we must modify our conceptual framework and develop new analytical tools, not simply exclude unpaid work because it is inconvenient to analyze. To do so, she objects, would be a fundamental and unjust violation of the human rights of women. Plus, the exclusion of unpaid work leads to profound flaws in policymaking in areas such as poverty.

The author notes that the continued exclusion of unpaid work stems in part from a flawed mainstream understanding of the economy. Households are a fundamental component of an economy. Left unmeasured, household production—and, by inference, unpaid work performed mainly by women—constitutes a subsidy to government and the private sector. Women's contributions to the economy are thus undercounted in terms of their economic contributions, while they are themselves kept at the margins of the economy and denied opportunities to reach their full economic potential. This represents a substantial loss of both personal and economic potential.

Hirway next reviews two strategies to reform unpaid work. The first is to recognize, reduce, and redistribute unpaid work, which requires a change in the culture as well as government policy. The second approach is to include unpaid work in the SNA in order to bring visibility and greater accuracy to macroeconomic measurement. In conclusion, the author argues that until our understanding of the economy includes unpaid work, our analyses and policy efforts will remain partial, inaccurate, and unjust.

www.levyinstitute.org/pubs/wp_838.pdf

Program: Explorations in Theory and Empirical Analysis

Marx's Theory of Money and 21st-century Macrodynamics

TAI YOUNG-TAFT

Working Paper No. 841, July 2015

Research Scholar Tai Young-Taft discusses Karl Marx's theory of money in light of the advent of fiat and electronic currencies and the development of financial markets. The author offers two critiques of Marx and the relevant literature. His analysis focuses on (1) today's identity of the money commodity, (2) possible heterogeneity of the money commodity, (3) the categories of land and rent as they pertain to the financial economy, (4) valuation of derivative securities, and (5) strategies for modeling, predicting, and controlling production and exchange of the money commodity and their interface with the real economy.

The author observes that contemporary discussions of Marx's theory of money center on the advent of fiat currencies not backed by gold or other commodities and the difficulties in articulating noncommodity theories of money and explaining financial crises. He notes that Marx frequently treated money as a commodity, often focusing on gold. However, as currencies came to be traded in a manner that was decoupled from gold, it became more and more difficult to argue that gold mediated the relationship between money and commodities. The author suggests that a monetary relationship between fiat currencies and commodities is necessary to substantiate the price relationship between money as a measure of labor value and the commodities purchased for money, a relationship that commodity money fulfilled through the labor theory of value. Absent such an explanation, the relationship between commodities and money may become untenable, or, indeed, the labor theory of value may itself be called into question, as there no such form of money to enable the social communication of exchange.

The author puts forward two critiques of Marx and the relevant literature, which underscores the difficulties in articulating noncommodity theories of money and explaining financial crises in relation to business cycles in modern history. The

first critique notes a tendency for prices to lie within a region close to labor values. The second critique focuses on the failure to apply the definition of a commodity (i.e., something that is produced not for personal use but to be sold) to financial assets, perhaps because of the social aspect of their production; the negligible labor content in a physical financial asset; or, finally, the discount for future earnings is undefined.

Young-Taft begins with a discussion of the labor theory of value, noting that Marx and other classical political economists were not wed to the notion that dynamics must achieve equilibrium in any meaningful sense. He then turns to Marx's theory of money in relation to finance, noting that Marx's treatment of credit, financial speculation, stock valuation, and so on treats money as a commodity and a concept of socially necessary labor time in relation to the industrial sectors of a given economy. Young-Taft argues that in order to analyze financial assets we may identify them as produced inputs into a productive process—financial assets are to be seen as commodities. The definition of the money commodity lends itself to including money with other financial assets, which trade for other commodities. He suggests that financial assets can be seen as commodities, and that the set of financial assets that meet the definition of money makes up the money commodity.

He also observes that there is substantial heterogeneity in the money commodity. Today, bank credit (as mediated by state credit) rather than gold is the contemporary money commodity, along with a variety of other financial instruments. Turning to the question of the production of the money commodity, the author stresses the social aspect of the production relative to credit in Marx's work. He argues that bank money and financial assets are capitalized relative to all future rents, just as land is capitalized. He then discusses a number of issues related to modeling money, finance, and real capital stocks.

The author concludes that the actual labor invested in the physical object that is a financial asset is negligible. Financial asset prices are therefore "fictitious" to the extent that they do not represent labor value. However, commodities, central to Marx's analysis, are inputs into productive processes that create other commodities. Young-Taft suggests that, provided we are willing to "give up the ghost of price," we should be able to analyze money, finance, and the real economy in ways that respect their codependence.

www.levyinstitute.org/pubs/wp_841.pdf

Direct Estimates of Food and Eating Production Function Parameters for 2004–12 Using an ATUS/CE Synthetic Dataset

TAMAR KHITARISHVILI, FERNANDO RIOS-AVILA, and KIJONG KIM

Working Paper No. 836, April 2015

Research Scholars Tamar Khitarishvili, Fernando Rios-Avila, and Kijong Kim evaluate the presence of heterogeneity, by household type, in the elasticity of substitution between food expenditures and time, and in the goods intensity parameter in the household food and production functions. Their analysis relies on a synthetic dataset created via a statistical match of the American Time Use Survey (ATUS) and the Consumer Expenditure Survey (CE). The authors' results indicate heterogeneity in both the elasticity of substitution and the intensity parameter. Furthermore, these results confirm that the elasticity of substitution is low for all household types.

Previous studies on US households have attempted to estimate the elasticity of substitution between the money households spend on food and the time spent for household production. These studies place the value between 0.22 and 0.75, suggesting that time is not a ready substitute for monetary expenditures in the household production function. This finding has important implications for policies and programs that use measures based on monetary compensation to promote household well-being via cooking at home—they are likely to be only partially successful, as the elasticity of substitution is quite low. However, this low average elasticity may mask variations by household type, particularly in terms of households with children and the age of these children. Such a finding would enable policymakers and program managers to make adjustments and improve outcomes.

Thus, the first contribution of this paper is to support the goal of promoting healthy eating habits in households, especially in households with children. To this end, the authors analyze the elasticity of substitution in single-headed and married-couple households, with and without children, by age group. This analysis is supported with an evaluation of the variation in the goods intensity parameter of the production function.

The authors' second goal is the construction of a synthetic dataset using the ATUS and CE for the period 2004–12 and the

March supplement of the Current Population Survey (CPS) as a link. This allows the authors to link household- and consumer-level data in the CE with this time-use data in the CPS. The statistical match allows the authors to construct a dataset in which each member of a household from the CPS dataset is linked to time-use data in the ATUS dataset. They then match the March CPS household data to the CE data on expenditures. This allows the authors to examine household characteristics and to aggregate individual time-use data to the household level.

Their analysis focuses on eating (i.e., the consumption of food/meals) and food production (i.e., all stages of meal preparation excluding eating), and employs a ratio of market expenditures to time. The authors interpret the ratio of market expenditures to time in terms of weekly expenditures on food per weekly hours spent preparing meals. Focusing on the elasticity of production in households with children by age, their model employs a linear specification for single-headed and married-couple households. They find that the estimates for single-headed households are similar to previously published estimates. Their estimates for married-couple households are somewhat higher than previous studies have reported but still remain well below 1. The results indicate that the elasticity of substitution in food production is higher than for eating in single-headed households and in married-couple households. They also observe that single-headed households have a lower elasticity of substitution in food production and eating than married-couple households, which suggests that these households might not substitute money for time to the same degree as married-couple households.

In terms of the goods intensity of food production and eating, food production is goods intensive for both household types. However, the eating process is not. Married-couple households display greater time intensity for eating. Generally, single-headed households use more goods-intensive food production technology than their married-couple peers, which may reflect greater use of ready-made meals.

There is strong variation in single-headed households with older children, as they use less goods-intensive food production technology (and use more time) than single-headed households without children. However, single-headed households with older children are more likely to substitute time with money, indicating that monetary incentives may more readily affect their behavior. However, the authors note that

the elasticity of substitution remains small across all household groups, underscoring the difficulty in using monetary incentives across the population.

In conclusion, this research shows that efforts to encourage healthy eating are likely to vary by household type. However, due to the low elasticity of substitution across all households, policies based on monetary incentives will face challenges in promoting changes in food production and eating behavior. Regardless, the method presented in this analysis may be applicable to the analysis of substitutability in other household production processes.

www.levyinstitute.org/pubs/wp_836.pdf

INSTITUTE NEWS

New Scholars

We are pleased to announce the addition of four new scholars to the Levy Institute. Senior Scholar Nancy Folbre is professor emerita of economics at the University of Massachusetts Amherst, where she taught from 1984 to 2013. Her work focuses on the interface between feminist theory and political economy, with a particular interest in caring labor and other forms of nonmarket work. She has taught at Bowdoin College and the New School for Social Research, and was a visiting scholar at the Gender Institute of the London School of Economics in 1995. Folbre received a five-year MacArthur Foundation fellowship in 1998, and is a former cochair of the MacArthur Research Network on the Family and the Economy (1997–2003). She was a member of the French government's Commission on the Measurement of Economic and Social Progress, established in 2008 and chaired by Joseph Stiglitz, and has served as a consultant to the United Nations, the World Bank, the International Labour Organization, the Population Council, and the International Center for Research on Women.

Folbre lectures extensively, and her work has appeared in *Science*, *Social Politics*, *Review of Income and Wealth*, *American Journal of Sociology*, *Review of Radical Political Economics*,

Cambridge Journal of Economics, *Journal of Human Development*, and *International Labour Review*, among other journals. She is a former associate editor of the journal *Feminist Economics* (1995–2005), and from 2009 to 2014 was a weekly contributor to the *New York Times*'s Economix blog. She is the author of six books and has contributed chapters to more than three dozen others. Her most recent publications include "Valuing Unpaid Child Care in the U.S.: A Prototype Satellite Account Using the American Time Use Survey" (with J. Suh), *Review of Income and Wealth* (2015); "The Care Economy in Africa: Subsistence Production and Unpaid Care," *Journal of African Economies* (2014, suppl. 1); *For Love and Money* (editor and contributor) (Russell Sage Foundation, 2012); *Saving State U: Why We Must Fix Public Higher Education* (The New Press, 2010); *Greed, Lust, and Gender: A History of Economic Ideas* (Oxford University Press, 2009); and *Valuing Children: Rethinking the Economics of the Family* (Harvard University Press, 2008). She holds a BA in philosophy and an MA in Latin American Studies from the University of Texas, and a Ph.D. in economics from the University of Massachusetts Amherst.

Senior Scholar Fernando J. Cardim de Carvalho is emeritus professor of economics at the Federal University of Rio de Janeiro and the former chairman of the Brazilian National Association of Graduate Schools in Economics (ANPEC). He has worked as a consultant to public institutions as well as financial industry associations, including the Central Bank of Brazil, the Brazilian National Bank for Economic and Social Development (BNDES), the Central Statistical Office of Brazil (IBGE), and the National Association of Financial Institutions of Brazil (Anbima); as well as NGOs such as IBASE (Brazil) and Action Aid USA. Cardim de Carvalho's work has been published in, among other journals, the *Cambridge Journal of Economics*, *Banca Nazionale del Lavoro Quarterly Review*, *International Journal of Political Economy*, *Intervention*, and *Journal of Post Keynesian Economics*, of which he is associate editor. He is the author of *Mr Keynes and the Post Keynesians* (Edward Elgar, 1992) and *Liquidity Preference and Monetary Economics* (Routledge, 2105), and co-author of *Economia monetária e financeira: Teoria e prática* (3rd ed., Elsevier, 2015). He holds a Ph.D. in economics from Rutgers University.

Senior Scholar John F. Henry is professor emeritus, California State University, Sacramento, where he taught economics from 1970 to 2004. He also lectures at the University of

Missouri–Kansas City, where he was a visiting research professor from 2005 to 2014. Henry's research interests include the history of economic thought, economic history, and political economy. He is the author of *John Bates Clark* (Macmillan, 1995) and *The Making of Neoclassical Economics* (Unwin Hyman, 1990; repr., Routledge, 2011), as well as a contributor to 10 volumes of collected essays. He has published more than 50 articles and book reviews in academic journals, including the *Journal of Economic Issues*, *Journal of the History of Economic Thought*, *History of Political Economy*, *Forum for Social Economics*, *Review of Political Economy*, *Journal of Post Keynesian Economics*, and *Studi e Note di Economia*. He is a former member of the steering committee of the International Confederation of Associations for Pluralism in Economics and the editorial boards of *Forum for Social Economics* and *Journal of Economic Issues*, and a past president of the Association for Institutional Thought.

Research Scholar Tai Young-Taft is an assistant professor of economics at Bard College at Simon's Rock, and previously taught at the Gulf University for Science and Technology, New York University, and St. Francis College. His research interests include stock-flow consistent modeling, stochastic dynamical systems, derivatives markets, international migration, foreign banking, and the history of economic thought. He is a former statistical consultant for the International Development Law Organization and has worked with various organizations worldwide, including Economics for Equity and Environment, Human Rights in China, and the Institute of Service Education for Teens. His publications include the Levy Institute working paper "Inside Money in a Kaldor-Kalecki-Steindl Fiscal Policy Model" (with G. Hannsgen) (June 2015) and "Stock Market Reaction to Debt-based Securities" (with M. Elain), *Frontiers in Science and Economics*, Vol. 11, no. 1 (2014). Young-Taft holds an MA in statistics from Yale University and an M.Phil. and a Ph.D. in economics from the New School for Social Research.

Levy MS Faculty Appointments

Research Scholar Fernando Rios-Avila joins new scholars Fernando Cardim de Carvalho and John F. Henry on the faculty of the Levy Economics Institute MS in Economic Theory and Policy program. Rios-Avila, who joined the Institute in 2013, works primarily on the Levy Institute Measure of Economic Well-Being under the Distribution of Income and Wealth program. As a doctoral candidate at Georgia State University, he worked as a graduate research assistant to Felix Rioja, and interned in the research department at the Federal Reserve Bank of Atlanta, working under the supervision of Julie L. Hotchkiss. He formerly served as a researcher at the Social and Economic Policy Unit (UDAPE) in La Paz, Bolivia, on issues of development, impact evaluation, and social expenditure, with an emphasis on children's welfare. His research, which spans labor economics and applied microeconomics as well as development economics and poverty and inequality, has been published in *The Review of Income and Wealth*, *Industrial Relations*, and *Business and Economics Research*.

Upcoming Event

Gender and Macroeconomics: Current State of Research and Future Directions

Levy Economics Institute of Bard College
Annandale-on-Hudson, New York
March 9–11, 2016

A workshop organized by the Levy Economics Institute of Bard College with the generous support of The William and Flora Hewlett Foundation

The goal of this workshop is to advance the current framework that integrates gender and unpaid work into macroeconomic analysis and enables the development of gender-aware and equitable economic policies. Both theoretical and empirical studies employing innovative methodologies and new datasets will be presented, as well as papers that provide a comprehensive picture of the state of the art, identify gaps, and indicate directions for future research.

Topics will include the relationships between economic structure, growth regime, and gender inequities; mechanisms and the extent to which unpaid work constrains women's participation in paid work and access to economic opportunities; the implications of women's labor market participation for their well-being and for intrahousehold allocation of time; structural, macroeconomic, and microeconomic aspects of women's employment in the informal sector; formulation and analysis of gender-aware policy interventions; and frameworks for integrating the role of unpaid work in measures of well-being.

Participation in the workshop is by invitation only.

Save the Dates

25th Annual Hyman P. Minsky Conference

Levy Economics Institute of Bard College
Annandale-on-Hudson, New York
April 12–13, 2016

The Hyman P. Minsky Summer Seminar

Levy Economics Institute of Bard College
Annandale-on-Hudson, New York
June 10–18, 2016

PUBLICATIONS AND PRESENTATIONS

Publications and Presentations by Levy Institute Scholars

JOHN F. HENRY, *Senior Scholar*

Publication: "The Business Enterprise in the Age of Money Manager Capitalism" (with T.-H. Jo), *Journal of Economic Issues*, Vol. 49, No. 1, March 2015.

Presentations: "Does 'Morality' Deserve a Place in Economic Theory? A Neoliberal and Institutional Debate" and "Brazelton on Keyserling," conference on "Institutionalism: History, Theory, and Futures," Association for Institutional Thought / Western Social Science Association, Portland, Oregon, April 9–11, 2015; "Classical Political Economy, the

Subsistence Wage, and Job Guarantee Concerns” and “Fred Lee, the Industrial Workers of the World, and Heterodox Economics,” 15th World Congress of Social Economics, Brock University, Ontario, Canada, June 23–24.

KIJONG KIM *Research Scholar*

Presentations: “Time Poverty of Mothers in Korea,” TV interview for *In Depth 60 Minutes*, Korea Broadcasting Service, June 24, 2015; “Measurement of Time and Income Poverty in Korea” (with A. Zacharias, T. Masterson, and T. Kwon), International Association of Time Use Research 37th Annual Conference, Ankara, Turkey, August 5–7.

THOMAS MASTERSON, *Research Scholar and Director of Applied Micromodeling*

Presentations: “Methodology for Measuring Time and Income/Consumption Poverty,” Thirteenth International Expert Meeting on Time Use and Unpaid Work, Mexico City, Mexico, June 4–5, 2015; “Policy Implications of Microsimulations Using the Levy Institute Measure of Time and Income Poverty (LIMTIP),” 24th IAFFE Annual Conference, Gender Equality in Challenging Times, Berlin School of Economics and Law, Berlin, Germany, July 16–18; “Measurement of Time and Income Poverty in Korea” (with A. Zacharias, K. Kim, and T. Kwon), International Association of Time Use Research 37th Annual Conference, Ankara, Turkey, August 5–7.

DIMITRI B. PAPADIMITRIOU *President*

Publications: “Euroland in Crisis as the Global Meltdown Picks up Speed” (with L. R. Wray), in A. Bitzenis, N. Karagiannis, and J. Marangos, eds., *Europe in Crisis: Problems, Challenges, and Alternative Perspectives*, Palgrave Macmillan, 2015; “Greek Debt: Do the Right Thing,” *The Huffington Post*, March 18; “Germany’s Fixation on Austerity as a Means in Achieving Political Union,” *Kathimerini*, March 29; “If Lenders Accept the Proposals, It Would Be Like Accepting They Were Wrong,” *Avgi*, April 27; “The Vulture Funds System Should Be Abolished,” *Tiempo*, June 7; “The Varoufakis Plan Is Not Related to the Levy Proposal,” *Naftemporiki*, 30 July 2015.

Presentations: Interview regarding whether Greece would get through the coming week’s crisis with Ian Masters, *Background Briefing*, May 10, 2015; speaker, Central Bank of Argentina

Money and Banking Conference, “Money, Finance and the Real Economy; Towards Full Employment and an Inclusive Growth,” Buenos Aires, Argentina, June 4–5; interview regarding participation in the Central Bank of Argentina Money and Banking Conference with Tomas Lukin of *Pagina 12* for the program *Economia sin Corbata*, June 8; interview regarding ideologues crippling the recovery and undermining an otherwise healthy economy with Ian Masters, *Background Briefing*, June 11; interview regarding the Levy Institute’s work with Mikael Brunila, *Taloussanommat*, June 17; interview regarding the possibility of a deal between Greece, the International Monetary Fund, and the European institutions with Laura Carpineta, Argentinian National News Agency, June 24; interview regarding Greece’s negotiations with European leaders and the Institute’s latest Strategic Analysis report with Kathleen Hays and Michael McKee, Bloomberg Radio, June 26; interview regarding outcomes of the Greek debt crisis with Kathleen Hays and Michael McKee, Bloomberg Radio, June 29; interview regarding the negotiations between Greek and European finance ministers going nowhere with Ian Masters, *Background Briefing*, July 7; interview regarding capital controls, Skai TV, July 7; interview regarding narrowing options for Greece with Kathleen Hays and Michael McKee, Bloomberg Radio, July 8; “The Varoufakis Plan Was a Surprise for Me,” interview in *Kathimerini*, August 9; “The Superbank That Opens the Way to Development,” *Ethnos*, August 10; interview regarding Greece on the day of the deadline for a new bailout agreement with Kathleen Hays and Michael McKee, Bloomberg Radio, August 20.

AJIT ZACHARIAS *Senior Scholar*

Presentations: Lecture, “Wealth, Poverty and Taxes in the US,” Economics Club of New York University, New York, N.Y., March 26, 2015; “Interlocking Deficits of Time and Income,” conference on “Women, Poverty Eradication, and Social Inclusion: From Beijing to Post-2015,” organized by the Government of Argentina, United Nations Development Programme, and UN Women, Buenos Aires, Argentina, May 6–8; “Measurement of Time and Income Poverty in Korea” (with K. Kim, T. Masterson, and T. Kwon), International Association of Time Use Research 37th Annual Conference, Ankara, Turkey, August 5–7.



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