INTERVIEW WITH SERGIO T. REBELO

INTERNATIONAL MACROECONOMICS

Professor Rebelo, your recent research on real exchange rates focuses on large devaluation periods. Why is that?

My research in recent years has focused on international macroeconomics including currency crises and large devaluations. In joint work with Martin Eichenbaum and Ariel Burstein, we studied the relation between prices and exchange rates in large devaluation episodes. We got interested in these episodes because it seemed much easier to understand large devaluations than the small changes in exchange rates that occur at business-cycle frequencies. Even though exchange rates are volatile, the quarter-to-quarter changes in exchange rates are relatively small. So finding a link between prices and exchange rates becomes difficult. When there is a large, say fifty-percent, devaluation then you have a better chance of measuring the impact of exchange rates on prices. To do this we used a large dataset collected specifically for this study.

What was the relationship between prices and exchange rates in your dataset?

A surprising finding was that the prices of non-tradable goods, which are mostly services, did not change much despite the devaluation. In contrast, the prices of tradable goods measured at the border (import and export prices) are very flexible. In fact, relative Purchasing Power Parity (PPP) holds approximately for these prices. After a 50 percent devaluation, import and export prices tend to go up by

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ACADEMIC CONFERENCES

MACROECONOMICS OF GLOBAL INTERDEPENDENCE

On March 3-4, the Study Center Gerzensee hosted the First Annual Workshop on the Macroeconomics of Global Interdependence. This workshop was organized jointly with the International Monetary Fund (IMF) and the Centre for Economic Policy Research (CEPR). The newsletter summarizes the contributions to this conference and includes an interview with Professor Sergio T. Rebelo, Northwestern University, one of the regular teachers at the Study Center, who describes his recent work on international finance. Financial globalization is also reflected in the way central banks manage their international reserves. Dr. Thomas Stucki describes the particular approach adopted by the Swiss National Bank. Finally, global imbalances and financial integration were major topics in our recent Central Bankers Courses. Besides covering these events and activities, this newsletter offers a glimpse on the celebrations related to the 20th anniversary of the Study Center Gerzensee.

Prof. Philippe Bacchetta
Director

Editorial

While creating new challenges for policymakers throughout the world, the phenomenon of financial globalization stimulates an active intellectual debate. At the Study Center, this debate has featured prominently for a long while, but it has received special attention during recent months. In particular, the Center co-organized an academic conference on the Macroeconomics of Global Interdependence, jointly with the International Monetary Fund and the Centre for Economic Policy Research (CEPR). The newsletter summarizes the contributions to this conference and includes an interview with Professor Sergio T. Rebelo, Northwestern University, one of the regular teachers at the Study Center, who describes his recent work on international finance. Financial globalization is also reflected in the way central banks manage their international reserves. Dr. Thomas Stucki describes the particular approach adopted by the Swiss National Bank. Finally, global imbalances and financial integration were major topics in our recent Central Bankers Courses. Besides covering these events and activities, this newsletter offers a glimpse on the celebrations related to the 20th anniversary of the Study Center Gerzensee.

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How about wages?

Wages did not move very much in the episodes we studied. In open economy models it is standard to assume that the worker spends half of his consumption expenditures on tradable goods and the other half on non-tradables. We found that this assumption is quite far from reality. When we studied the composition of the CPI together with input-output tables, we found that fifty percent of the CPI is indeed comprised by non-tradables, such as health, education, housing, and transportation. But half of the remaining fifty percent of the CPI consists of non-tradable distribution services, such as retail, wholesale, transportation, and insurance. And of the remaining twenty-five percent of the CPI local goods have a large share. Local goods are goods that have typically no demand outside of the country of origin, so their price is driven by local demand. A Swiss example of a local good is the milk-based soft drink Rivella; I suspect there is little demand for Rivella outside of Switzerland (but I could be wrong!). The fraction of consumption goods imported directly in a country like Brasil is around 3-4%. If you take into account the fact that materials and intermediate goods are imported to produce consumption goods locally, then you get to a share of 10-12%. This share of tradables is very different from the fifty percent used in the standard calibration. To go back to why the wages do not change very much: most of what the consumers consume is not tradable. If the prices of non-tradables do not change, a large devaluation ends up having a small impact on the standard of living of workers. This small impact is consistent with a relatively stable nominal wage.

Can we say there is wage or price stickiness?

A very striking phenomenon we observed in Argentina was that during the eight months in which we collected data prices of non-tradables remained basically constant. I tried - I feel ashamed about this - to influence the price collection process by asking our data collection team to bring to the attention of non-tradable producers that they could change prices. And to stress that they could raise or lower prices, that both of these were possibilities. The non-tradable producers replied that if they raised prices and no one else did, they would lose a lot of business. So we ended up writing a model which has this feature partly inspired by this very informal evidence.

We also discovered some interesting issues about price stickiness. Some supermarkets in Argentina raised their prices on Fridays and lowered them on Mondays, because weekend shoppers tended to be professionals who have lower price elasticities. These frequent price changes suggest that physical menu costs are small. We also noticed a potential measurement problem in the CPI. After large devaluations there is a "flight from quality", stores introduce cheaper products with lower quality. These products are sometimes introduced in the CPI basket without the necessary quality adjustment. As a result there is a downward bias in measured inflation.

Is there a specific method to identify transportation and distribution costs in prices?

In the paper we use a decomposition method proposed by Charles Engel. The real exchange rate is written as having two components: one is basically the failure of the law of one price for tradables, and the second one is changes in the relative price of non-tradables. If you know the weights of tradables and non-tradables in the CPI, you can do this decomposition very easily. We found that most of the CPI is non-tradable and that most of the movements in the real exchange rate after large devaluations can be accounted for by changes in the relative price of non-tradables.

Over the business cycle or during small devaluations, relative PPP does not hold perfectly even at the border. Why is that?

After a large devaluation, it is very costly not to adjust the price. But after a small devaluation, firms may keep prices constant to preserve their market share. You can see instances of this type of behavior in the European exports to the U.S. When the Euro appreciated considerably against the U.S. dollar, the prices of the European exports to the U.S. remained stable. Porsche is a famous example: it lost a lot of market share in the late 1980s and early 1990s when it raised U.S. prices in response to the devaluation of the dollar. So before the recent devaluation Porsche had hedged heavily to ensure that it could keep its price constant and preserve its market share. My co-author Ariel Bursten has been working with Andy Atkeson on modeling this kind of behavior.

You have a very recent paper on currency speculation. Can you tell us a little bit about that?

It is well known that Uncovered Interest Parity (UIP) fails. The UIP condition says that a high interest rate currency should depreciate to the point where investors are indifferent between investing in that currency and in a lower interest rate currency. But in the data high interest rate currencies actually appreciated. In joint work with Martin Eichenbaum, Craig Burnside, and Isaac Kleshchelski, we study the returns to currency speculation strategies that exploit the failure of UIP. We find that the monthly Sharpe ratio for these speculation strategies is 0.20, much higher than the monthly Sharpe ratio of the S&P 500 which is 0.14. We also find that the payoffs to currency speculation are uncorrelated with risk factors such as consumption growth, so the high Sharpe ratio is not a compensation for risk. We argue that, despite the high Sharpe ratio, there may be no free lunch because of the presence of price pressure in currency markets. When you see a deviation from the UIP and try to bet on this, the quotes move against you so that, at the margin, the strategy is no longer profitable, the marginal Sharpe
ratio is zero. Price pressure is important because the payoff to speculation strategies is small so speculators must wager very large sums to generate a significant payoff.

But why does UIP fail?

We propose a micro-structure-based model to explain the deviations from UIP that we observe in the data. The model is based on adverse selection, as in the work of Glosten and Milgrom. When market makers quote rates in forward markets they have to take into account the fact that some traders might at times have information that is superior to theirs. We assume that there are uninformed agents that follow a simple trading rule, they go long on currencies that are expected to appreciate based on public information. If there is good news about Switzerland, public information that suggests that the Swiss franc will appreciate, uninformed investors go long on the Swiss franc. This behavior implies that when the currency tends to appreciate, the market maker can actually sell the currency forward at a relatively low price because he faces less adverse selection (he is more likely to be trading with uninformed agents who are just acting on public information). This property is sufficient to generate the failure of UIP that we see in the data.

One of your research areas is business cycles. What is your view on the reasons behind the "Great Moderation" (i.e. the recent period of lower output volatility in the U.S. economy)?

It is well known that business cycles have become less volatile and output movements have become more persistent in the last couple of decades around the world. There are many possible explanations for this phenomenon, including improvements in monetary policy. But one channel that has not been emphasized is improvements in the quality and quantity of information about the future available to economic agents.

Wall Street employs many professionals whose job is to gather and process news about the future and investigate their implications for asset prices. In the last few decades the amount of information and the quality of information have increased dramatically. In joint work with Nir Jaimovich we study the impact of better information about the future on business cycles.

In most business cycle models shocks to the economy are assumed to follow AR(1) type processes. Thus the future is forecasted using the current values of the shock. In our model we assume that people receive news about the future and can use this information, in addition to the current values of the shock, to forecast the future. And if there is better news about the future - when, for example, the signal-to-noise ratio goes up - then the future becomes more forecastable. As a consequence output volatility falls and output persistence rises. So the increase in the quality and quantity of news about the future may have contributed to the Great Moderation.

Is it possible that developments in the financial industry also played a role?

Certainly there are now more risks that can be diversified. U.S. banks no longer have to hold their mortgages; they can sell them in secondary markets to diversify their risk. This diversification makes the financial system more stable.

It is difficult to say empirically which factor has been most important in the Great Moderation. For example, demographic changes may also have played a role in the Great Moderation. In fact, my co-author Nir Jaimovich has a paper with Henry Siu where they find evidence in favor of this hypothesis. In the data most of the fluctuations in employment are accounted for by young workers. Jaimovich and Siu show that if you plot the structure of the population and the volatility of output for the G7 countries, they commove pretty closely. The fraction of young workers in the G7 economies has declined and business cycles have become more stable.

You are about to receive an award in Portugal. What is the occasion?

The President of Portugal, Aníbal Cavaco Silva, will award me the title of Grand Official of the Order of Santiago de Espada (St. James of the Sword) on the "Day of Portugal," June 10. It was explained to me that this award has been granted since the 12th century as recognition for great military achievements. Today the award is given for achievements in Arts and Sciences. I am much honored to have been chosen to receive this award.

Professor Rebelo, congratulations on your achievements and thank you very much for this interview!
High Financial Integration: A Scenario Analysis* co-authored with Michele Cavallo (Federal Reserve Bank of San Francisco). The paper considers the impact of valuation effects on the adjustment to the U.S. current account deficit in a setup based on a recent analysis by M aurice Obstfeld and Kenneth Rogoff. While the total required adjustments in the U.S. current account and in the value of the dollar are large, the authors find that valuation effects lead to a smoother pace of adjustment.

Robert Kollman (University of Paris XII) presented "International Portfolio Equilibrium and the Current Account". The paper develops a stochastic dynamic general equilibrium model with home bias in consumption and with complete markets. It derives optimal international portfolio holdings and shows that under reasonable parameter values there is a portfolio home bias. It also shows that the current account will fluctuate with equity price movements.

Eswar Prasad (IMF) provided an overview of the existing literature and of the empirical evidence on the implications of financial globalization. His research was based on the paper "The Macroeconomic Implications of Financial Globalization: A Reappraisal and Synthesis" written jointly with Ayhan Kose (IMF), Kenneth Rogoff (Harvard University) and Shang-Jin Wei (IMF). His presentation was followed by the one of Gianluca Benigno (London School of Economics, LSE) on "Adjusting to Capital Account Liberalization" co-authored with Kosuke Aoki and Nobuhiro Kiyotaki (LSE). He presented an open-economy model with credit constrained firms and examined the impact of capital account liberalization. The paper shows that the level of financial development is a key factor in determining the impact of capital account liberalization on capital flows, productivity and employment. For example, at an intermediate level of financial development, liberalization may discourage unproductive producers. This would have a negative short-term impact on employment, but increase productivity in the long run.

The last paper of the first day "Output Drops, and the Shocks that Matter" was presented by Torbjörn Becker (IMF) as a joint work with Paolo Mauer (IMF). The paper defines output drops and analyzes them in a large panel of countries, using a century of data. The authors find that output drops are more frequent in countries at a lower stage of development. Moreover, they evaluate the cost of these drops and find that the largest costs are associated with external financial shocks for emerging markets and with real external shocks for developing countries.

Andrew Levin (Federal Reserve Board) presented his work "Monetary Policy Rules in Economies with Traded and Non-Traded Goods" co-authored with Brian Doyle and Christopher Erceg (Federal Reserve Board). He first described evidence, based on VAR analysis, that the tradable-producing sector is more interest sensitive than the non-tradable sector. Thereafter, he presented a model incorporating such heterogeneous interest-rate responses and examined optimal monetary policy. In this framework, an interest rate rule placing a large weight on a price index that is sensitive to exchange rate fluctuations is likely to induce excessively large movements in sectoral outputs.

Michael Devereux (University of British Columbia) presented the paper "A Portfolio Theory of International Capital Flows" written jointly with Makoto Sato (Hitotsubashi University). The model incorporates nominal bond portfolio choices in a two-country, stochastic, continuous time model. The authors show that there is a unique portfolio structure for each country and that the form of national portfolios depends on the stance of monetary policy. Moreover, the structure of bonds portfolios is an essential component of current account adjustment.

The last paper of the conference was presented by Marcel Fratzscher (European Central Bank, ECB) on "Global Financial Transmission of Monetary Policy Shocks", joint work with Michael Ehrmann (ECB). He presented empirical evidence on the effect of U.S. monetary policy shocks on fifty equity markets. While the response is heterogeneous across markets and sectors, the paper finds that stock returns fall on average after a U.S. monetary policy tightening, measured by the Federal funds futures around the announcement of FOMC decisions. Moreover, the impact is larger for countries with a high degree of global integration.

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* The paper is available online at: [EconPapers](http://econpapers.repec.org/).
The National Center of Competence in Research on Financial Valuation and Risk Management (NCCR FINRISK) is a research program supported by the Swiss National Science Foundation. On June 12-13, several members of this network met at the Study Center to attend three events. First, the network held its annual Research Day and several senior researchers presented their recent works. Since FINRISK is divided into nine individual research projects, the presentations covered a wide range of topics including asset pricing, corporate finance, risk management, and quantitative methods in finance.

Second, the network held its Doctoral Workshop. As in previous years, a group of about twenty doctoral students in finance at Swiss universities presented chapters of their dissertations. Each presentation was discussed by another graduate student. René Stulz (Ohio State University), Jérôme Detemple (Boston University) and senior academics from Swiss universities also participated in these sessions. Finally, the meeting concluded with a keynote lecture on “Emotions meet Finance” by Klaus Scherer (Université de Genève).
Central Banking becomes a "global village"

The challenges for central bankers change constantly. The Study Center Gerzensee therefore keeps adapting its courses in an effort to prepare central bank economists for their difficult jobs back home. More than 150 central banks have sent economists to our courses during the past two decades. Six different courses are offered each year, lasting between two and three weeks. Typically, a course has about 27 participants with various backgrounds and interests; a majority of these participants come from developing and emerging economies.

A clear trend over the past few years has been the improved, and less unequal academic preparation of the course participants. Ten years ago, participants from, say, Latin America arrived at Gerzensee with a strikingly different set of knowledge compared to their peers from industrialized countries, or eastern transition economies. Today, participants from all these regions read the same textbooks, work with the same computer programs, and have attended the same programs of international capacity building. Central bankers seem to speak much more of a common language today, making it easier to take advantage of their international professional network. Thus, central banking is becoming a "global village" and may give us a foretaste of globalization expanding into other areas.

T his trend, in turn, poses a challenge for providers of training courses like us. As the educational level of participants rises, the demand for a professional exchange of expertise becomes more important. Central bankers like to learn from each other, and compare their policy problems and solutions. At the Study Center, we responded in our new course on "Monetary Policy, Exchange Rates and Capital Flows" by giving more room to group exercises, games and discussions. Stronger interaction among participants also helps establish a professional network, which can be relied upon for many years.

Courses 2006

We have offered four courses in the first part of 2006. In February, we organized a two-week course on Advanced Topics in Empirical Finance, targeted at researchers in financial markets. Since the course required a formal background in mathematics and statistics, it attracted participants with a Ph.D. Some of the topics covered were: the information content of asset prices; extreme value theory; the micro-structure of financial markets; and empirical aspects of financial stability. The course was taught by Professors Michael Rockinger (University of Lausanne), Casper de Vries (Erasmus University, Rotterdam) and Thierry Foucault (HEC School of Management, Paris).

In March, we offered a three-week course on Monetary Theory and Monetary Policy, reviewing empirical techniques and policy implications. Professor H. Reis (University of Berne) and Gerzensee faculty Pinar Yesin, Dirk Niepelt, and Benedikt Braumann, taught in this course. Teaching assistants Daniel Burren, Marco Cavaliere, Tobias Menz and Patrick Winistorfer lectured on empirical methods and guided participants through applications and exercises.

A new three-week course in April on Monetary Policy, Exchange Rates and Capital Flows, provided policy-oriented training in international economics. The course started with a policy game, where participants had to steer a country through an economic crisis and discuss policy options. A second interactive game followed in week two on speculative attacks. The lectures explored equilibrium real exchange rates, the exchange-rate pass-through and current account dynamics. Global imbalances (week three) were a concern to many participants who experienced a rapid build-up of reserves in their countries. And while markets were buoyant during the course, lectures on financial crises served to refresh important lessons of the recent past. The lecturers were Professors Hélène Rey (Princeton University) and Gerzensee faculty Philippe Bacchetta, Benedikt Braumann, Philipp H. Reis, Dirk Niepelt, and Pinar Yesin.

In May, we offered a three-week course on Monetary Economics. In the first week, Professor Juan J. Dolado (University Carlos III, Madrid) introduced modern methods in the econometrics of time series. Topics included Granger-causality, structural VARs, and dynamic general equilibrium models. In the second week, Professor Frederic S. Mishkin (Columbia University) emphasized applications in monetary policy. He focused on the transmission mechanism, the role of central banks in promoting financial stability and monetary policy strategies.
ASSET MANAGEMENT AT THE SWISS NATIONAL BANK (SNB)

In the last few years, the SNB's management of foreign currency reserves has been influenced by two trends. The U.S. dollar's share within the portfolio has been reduced from above 80% to 30%. At the same time, the Euro has become the most important reserve currency and, by including other currencies like the pound sterling, diversification has been further enhanced and overall currency risk significantly reduced. This has permitted the SNB to invest in riskier assets like corporate bonds or shares and, consequently, to raise the expected risk-adjusted yield on foreign currency reserves. The SNB does not engage in stock picking. Instead, for each selected market, a market index is replicated. As a principle, the SNB does not hold investments in bonds and shares of Swiss companies.

The SNB's assets are required to meet the criteria of security, liquidity and performance and are subject to the primacy of monetary policy. To secure liquidity, a minimum amount of Swiss francs has to be invested in U.S. government bonds as well as in government bonds issued by Germany and France. These bonds can be sold within two days without affecting prices too much. The remaining part of the portfolio can be invested in less liquid securities as long as the targeted risk tolerance - expressed as value at risk (VAR) - is observed. Whilst observing the restrictions on liquidity and security, the SNB also tries to optimise risk/return properties of foreign currency reserves.

The Governing Board of the SNB determines the investment strategy for total assets and foreign currency reserves on an annual basis. First and foremost, it decides on the allocation of foreign currency reserves to shares and fixed-interest securities as well as on currency allocation. Within the limits defined by the Governing Board, an Investment Committee implements the investment strategy. Based on the market forecasts of the Investment Committee members, the Investment Committee decides on the actual asset allocation on a monthly basis.

Both internal and external portfolio managers implement and manage the individual portfolios. Generally, the SNB delegates the management of those investment categories for which it does not want to build up the necessary resources internally, mortgage-backed securities (MBS) are a good example. The entire investment activity is monitored by risk management.

Dr. Thomas Stucki
Head of Asset Management

PAST EXPERIENCES OF AN ASSISTANT AT THE STUDY CENTER GERZENSEE

Between 1988 and 1992, I worked at the Study Center as an assistant to the former Director, Professor Walter Wasserfallen. Back then, the Central Bankers' Courses lasted eight, later six weeks, a long time, considering the limited entertainment opportunities in Gerzensee. We assistants were in close contact with the participants, not only in class but also during the "sightseeing tours" on weekends. Today, I still meet people at other central banks who I trained in Gerzensee.

We also offered public training in finance for the Swiss financial sector and special courses for individual banks.

At the time, there were only very few courses offered in this area and demand was high.

A special event was the installation of a new computer room in the attic of the castle. At the time, it was completely new for individual computers to be centrally controlled by a "teacher PC". Such central controllability was extremely valuable, however, since the know-how of using PCs had not yet reached every corner of the central banking world.

I especially remember the positive relationship between the staff members at the Study Center. We were a very small team compared to the current one, and we complemented each other really well.

STAFF NEWS

At the end of January, Anton Schmid retired after having worked twenty years at the Study Center's equipment engineering and housekeeping department. We express our gratitude to Anton Schmid and wish him all the best for the future. Pascal Krüger, whom we cordially welcomed in February as new housekeeping staff member, will contribute to uphold the traditionally excellent services at the Study Center. Tim Frech obtained his doctoral degree from the University of Konstanz and left the Study Center in spring. He has taken a challenging job at the Swiss Federal Banking Commission in Berne. Daniel Burren and Tobias Menz, two of our teaching assistants, increased their commitments and started to work full-time after successfully passing the final exams of our "Swiss Program for Beginning Doctoral Students in Economics".

Mr. and Mrs. Anton Schmid
Mr. Pascal Krüger
20th ANNIVERSARY OF THE FOUNDATION

From June 30 to July 1, 2006, the Study Center celebrated its 20th anniversary. Current and former members of the Foundation and Academic Councils, employees and retired staff, representatives and inhabitants of the surrounding villages, as well as many other people who have been part of the Study Center’s history joined to celebrate this event. During these two days of festivities, the attractions included an open-air concert and an open house.

Oldies Revival Band

Mr. V. Losinger and Mr. W. Marti

Dr. J. P. Roth, Chairman of the Governing Board, SNB

Mr. U. Augstburger, Mayor of Gerzensee, offering the flag of the village to Prof. N. Blattner, Chairman of the Foundation Council

Prof. Philippe Bacchetta, Director of the Study Center

Dr. and Mrs. J. P. Roth

Mrs. Ph. Bacchetta and Prof. Dirk Niepelt

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