

# CONFERENCE PROCEEDINGS

## Current Account Sustainability in Major Advanced Economies (II)

<http://www.ssc.wisc.edu/~mchinn/academic.htm>

This conference is the second meeting of the Current Account Sustainability in Major Advanced Economies program, held on May 2-3, 2008 at the University of Wisconsin -- Madison, presenting research on theoretical and empirical aspects of the determinants of major economies to sustain large current account deficits over prolonged periods. The conference is sponsored by the Center for World Affairs and the Global Economy and the Robert M. La Follette School of Public Affairs, cosponsored with the Department of Economics, the European Union Center of Excellence, and the Center for International Business Education and Research as co-sponsors.

### *How Long Can the Unsustainable U.S. Deficit be Sustained?*

Carol Bertaut (Federal Reserve Board), **Steve Kamin** (Federal Reserve Board), and Charles Thomas (Federal Reserve Board)

#### **Abstract:**

This paper addresses three questions about the prospects for the U.S. current account deficit. Is it sustainable in the long term? If not, how long will it take for measures of external debt and debt service to reach levels that could prompt some pullback by global investors? And if and when such levels are breached, how readily would asset prices respond and the current account start to narrow? To address these questions, we start with projections of a detailed partial-equilibrium model of the U.S. balance of payments. Based on plausible assumptions of the key drivers of the U.S. external imbalance, they indicate that the current account deficit will resume widening and the negative NIIP/GDP ratio will continue to expand. However, our projections suggest that even by the year 2020, the negative NIIP/GDP ratio will be no higher than it is in several industrial economies today, and U.S. net investment income payments will remain very low. The share of U.S. claims in foreigners' portfolios will likely rise, but not to an obviously worrisome extent. All told, it seems likely it would take many years for the U.S. debt to cumulate to a level that would test global investors' willingness to extend financing. Finally, we explore the historical responsiveness of asset prices and the current account in industrial economies to measures of external imbalances and debt. We find little evidence that, as countries' net indebtedness rises, the developments needed to correct the current account - including changes in growth rates, asset prices, exchange rates - materialize all that rapidly. We would emphasize that these findings do not imply that U.S. current account adjustment is necessarily many years away, as any number of factors could trigger such adjustment. Our point is rather that international balance sheet considerations likely are not sufficient, by themselves, to require external adjustment any time soon.

**Discussant's Comments by Jeffrey Frankel (Harvard University):**

This is the right paper at the right time. I have rarely read a paper that so precisely addressed a question that I had just been wondering about, and that answered it so convincingly. Since 2006 we have seen substantial US current account deficit (CAD) adjustment, which has been readily attributed to the big US dollar depreciation and, more recently, the US slowdown. So the question I had is: has enough adjustment now taken place that the CAD path is now sustainable? The authors' answer is no. The main findings of the paper are that in the steady state, the rate of growth of US imports is permanently higher than that of US exports presumably because of Houthakker-Magee effect, the trade and current account deficits deteriorate steadily after 2010. Thus the Net International Investment Position (NIIP) deteriorates steadily and, with a small lag, net investment income follows. The conclusions are as follows: widening of CAD and deterioration of the NIIP/GDP position will soon resume and is unsustainable at the given exchange rate and growth rate. However, these trends are not as worrisome as a few years ago, and there is little dependence, econometrically, of interest rates or exchange rates on NIIP or CAD.

My overall reaction to their conclusion is as follows. On investment income, we should not count on a permanent US ability to borrow at interest rates lower than other countries. On the lack of econometric evidence of predictable effects on interest rates and exchange rates, this is par for the course. Explaining financial market prices is always notoriously difficult. But some relations are very likely to hold one way or another. Interest rates and exchange rates are merely the most easily understood market signal. Causality can run through other transmission channels. In addition, I have one suggestion for the further research. The best denominator for international indebtedness may be, not GDP, but rather exports, or production of tradable goods. Also, I have several questions. The first one is what is state of play regarding the Houthakker-Magee effect? The reason for this is that nobody but an FRB staff member is likely to be able to tell us. The second one is as follows. Looking forward from 1982, if one were to have accumulated the subsequent 25 years of US trade deficits, one would have forecast 2008 NIIP far worse than current two and half trillion in the US dollar. Two parts of the explanation are familiar: annual increases in the dollar valuation of US assets held abroad and higher returns received on US assets abroad than paid on debt. Then, the question is: is not the biggest part of the explanation that gross asset and liabilities have been revised in a favorable direction? If so, might that continue into the future and disrupt authors' forecasts? Another question is: the paper assumes the US earns substantially more on its asset abroad even within a category (FDI) than it pays out, but Exhibit 6 in the paper seems to show US right in middle of pack, in terms of Net Investment Income/NIIP. It is not high.

**General Discussion:**

Kamin: We are not assuming exorbitant privilege for US, but the existing interest rate differentials on the direct investment. Though there is no satisfactory to explain such differentials.

Mann: The results depend on the assumption of future interest rate differential dynamics. Different valuation adjustment comes mainly from the asset prices, but not from dollar depreciation.

Engel: In this paper's approach, the saving rate is falling a lot as a consequence of trends in other variables. All theoretic models include a role for saving, so it is not appropriate to ignore saving.

Kamin: Since there is uncertainty about the appropriate model in general equilibrium, we need to use some models to get some insights. It may generate some inconsistency with general equilibrium results.

### *Asset Prices and Current Account Fluctuations in G7 Economies*

**Marcel Fratzscher** (European Central Bank) and **Roland Straub** (European Central Bank)

#### **Abstract:**

The paper analyses the effect of equity price shocks on current account positions for 16 industrialized countries in 1974-2007. It presents a DSGE model to derive restrictions for the identification of asset price shocks, and uses a Bayesian VAR with sign restrictions to empirically test for the effect of equity price shocks. Such shocks are found to exert a sizeable effect, with a 10% equity price increase for instance in the United States relative to the rest of the world worsening the US trade balance by 0.9 percentage points after 16 quarters. Moreover, the response of the trade balance to equity price shocks varies substantially across countries, and this heterogeneity appears to be linked in particular to the financial market depth and equity home bias of countries.

#### **Discussant's Comments by Kenneth D. West** (University of Wisconsin):

The paper first simulates a closed economy dynamic stochastic general equilibrium to get sign restrictions that distinguish a non-fundamental asset price shock from three other shocks, monetary policy shocks, technology shocks, and government spending shocks. Simulation with a range of plausible calibrated parameters finds that among the four shocks, only the non-fundamental equity price shock makes consumption, inflation, interest rate, and equity prices move in the same direction. Then, for 16 industrialized country quarterly data set over 1974 to 2007, such sign restrictions are used to identify VAR response of six macro variables, relative equity prices, relative consumption, relative interest rates, relative CPI inflation, trade balance/GDP, and real exchange rates, to an equity price shock country by country. The good feature about the responses to a non-fundamental equity price shock is that the magnitude of the interest rate response is consistent with the interest rate rule obeying Taylor principle: relative interest rate rise more than does relative inflation in virtually all countries, implying relative real interest rates rise. This is also consistent with another feature of the response to an equity price shock that real exchange rates appreciate. The response of the trade balance to equity price shocks varies substantially across countries. It is an interesting, technically well-done paper. However, it is not sure that the model is particularly well suited to analyze equity

prices and trade deficits because it is a closed economy model with no capital and balanced government budget in every period. Moreover, the response of consumption looks big: 10% increase in relative equity price, due to non-fundamental shock, leads to about 5% increase in relative consumption. Other questions that have arisen are: how sensitive are results to sample, because insofar as Taylor rule logic rationalizes key parts of pattern of responses, one might hope that things look different in early parts of sample? Why do the shapes of the real exchange rate and consumption responses look so similar in country after country?

**General Discussion:**

Fratzscher: The extension to the open economy will not affect the model predictions qualitatively, and the model is trying to focus on the asset price as one driving force behind trade deficit.

Corsetti: What are the implications of that conditional productivity shock.

Rogers: Some concerns about the details of how the econometric procedures were implemented in order to obtain the results, and how sensitive the results are to those estimation procedures.

Wei: Is there a possible way to use wealth or capital stock as the financial depth index?

Masumoto: The results may depend on the value of elasticity of intertemporal substitution.

Kamin: Raises the question about the distinction between the nominal interest rate and real interest rate.

***Current Account Sustainability and the Relative Reliability of the International Accounts***

Stephanie Curcuro (Federal Reserve Board), **Frank Warnock** (University of Virginia), and Charles Thomas (Federal Reserve Board)

**Abstract:**

Disentangling competing theories on whether the U.S. current account deficit is sustainable requires detailed knowledge of the underlying balance of payments and international investment position data. For example, one's views of the "capital gains finance the deficit" and "dark matter" theories depends importantly on one's views of the relative reliability of data on various subcomponents of the international accounts. In this paper we bring together existing and new information on the relative reliability of components of the international accounts to shed light on competing theories that ultimately bear on whether the current account deficit is sustainable.

**Discussant's Comments by John Kitchen** (Executive Office of the President):

This is a very ambitious attempt to examine the data on various components of the international accounts. This is the continuation of the work of Curcuro, Dvorak and Warnock (2008), but with a focus on the measurement errors in net international investment positions and international financial flows data, especially on capital gains in various accounts. This contrasts with the previous paper that concentrated on

measuring total returns. They examine many data series to better measure of the NIIP, in order to attempt to reduce improper estimates of capital gains through accounting. The paper concludes that there are serious hazards in analyzing the current account using published data series. Meanwhile, the net effect in aggregate is not a large difference relative to the published data. Some constructive comments are as follows. First, the paper needs more descriptive discussion to help readers more easily understand the paper. Secondly, some concerns about the adjustment of valuation components in terms of methodology, the paper adjusts many components in the second part, but with limited legitimacy, for instance, the real estate, the missing assets class. Finally, there is some uncertainty about the paper's role. It serves primarily a cautionary role for those who used the data. Is it an attempt only to show the problems in published data? How should the analyst and researcher use the data properly?

**General Discussion:**

Warnock: We view the paper as an illustration of how to fill the gap between small interest differentials and large capital movements,

Engel: Questions the export data, given that intrafirm trade is underestimated in the trade data due to tax reasons.

Mann: The work includes financial account adjustments that are good, but only small changes on the export side, and no adjustment on imports and services. More goods and service work needed.

Matsumoto: Raises concerns about the adjustment of different FDI.

***U.S. International Trade in Other Private Services: Do Arm's Length and Intra-Company Trade Differ?***

Deniz Civril (Brandeis University) and **Catherine Mann** (Brandeis University)

**Abstract:**

US international trade in so-called 'other private services' (OPS) has more than tripled in the last decade to account for 13 percent of total exports and 5 percent of total imports. About 30 percent of this trade is between a US multinational parent and its affiliates abroad (intra-firm trade), about 60 percent is 'arms-length' trade. Using annual panel data across countries and time, this paper examines the likelihood that US trading partners in goods also exchange Other Private Services, whether this probability affects the factors that drive OPS trade, and finally investigates whether the factors that drive OPS trade differ according to multinational ownership and the level of income in the source and destination country. We conclude that selection bias - to trade with the US in goods and services or just goods - does not impact the foreign factors that affect trade in services. The positive factors are economic size, richness, internet connectivity, tertiary FDI assets, and bilateral trade agreements and negative factors of distance, taxes, corruption. The foreign factors that differentially enhance intra-firm trade in OPS as compared to arms-length trade include: a higher share of services in GDP, greater internet connectivity, and more tertiary FDI assets.

Factors such as relative wage growth abroad, corruption, distance, and language do not differentially affect intra-firm vs. arms-length trade in OPS. Dividing the sample into relatively richer vs. relatively less rich foreign trading partners suggests that internet connectivity is much more importantly associated with intra-firm trade in OPS for the less rich trading partners.

**Discussant's Comments by Menzie Chinn** (University of Wisconsin):

The paper is an attempt to take serious analysis on the service data, and we see many surprising results which will provide some policy implications. Service sector trade has steadily increased over time, though the share of service trade is not big compared to current account. However, there is a trend that the share is increasing substantially, which contributes more to today's current account deficit than before. There is a question about the calculation of the data. The data used are nominal, but should they be in real terms? Or is this infeasible? Also, I have some concerns about the empirical methodology. The data is the annual BEA service data. The basic estimation is similar to the standard gravity model. Most of the results are reasonable. But we see some surprising results as well, which raise some questions about the model specification. In addition, one would want additional justification for the selection equation, and the empirical methodology to deal with the data. There are policy implications derived from the estimation results. But it seems that the authors ignore the exchange rate or relative price effect. Overall, this is an interesting paper, providing details on service trade and some surprising results. The latter points out some future research directions.

**General Discussion:**

Mark: Given the large volume of intrafirm trade, trade prices don't reflect market prices.

Wei: Service trade can be regarded as the complementary for good service, but distance plays the same role in the estimation.

Mann: since there are no proper deflators for service trade, the service trade data are in nominal terms. There is no exchange rate factor because exchange rate never plays significant role. The distance effect is consistent with other studies that claim distance is more important to service trade than good trade. There is no way to avoid the transfer price problem in our data.

***When, Where and How does Government Spending Matter in Open Economies? An Empirical Investigation***

**Giancarlo Corsetti** (European University Institute and University of Rome III), Andre Meier (European University Institute), and Gernot Muller (Goethe University Frankfurt)

**Abstract:**

What are the macroeconomic effects of shocks to government spending? We analyze this question by specifically exploring non-linearities in the impact of fiscal shocks on output, private consumption, the trade balance, and real exchange rates in a

sample of OECD countries. We consider non-linearities due to the size of the shock, the degree of openness and size of the country, and the initial budgetary conditions. After identifying fiscal shocks as residuals of estimated spending rules, we use them as explanatory variables in single variable regressions, including interaction terms. In our finding, in normal times the consumption multiplier is positive, yet quickly decreasing in the size of expansions; at times of fiscal strain it becomes unambiguously negative. Correspondingly, the trade balance deteriorates substantially in normal times, consistent with twin deficits; it shrinks, and turns into a small surplus a times of fiscal strain.

**Discussant's Comments by Lukasz Drozd (University of Wisconsin):**

This paper is an interesting attempt to explore the empirical link between the effects of fiscal policy shocks on macro aggregate variables and the degree of fiscal strain at the time of the shock, the size of the fiscal shock, the country size, and the trade openness. In order to explore this, they use two-step empirical approach. Given time time-series for 19 OECD countries, they first estimate fiscal policy rules which follow a function of the state of economy to extract discretionary fiscal shocks, and then, given estimated shocks, use difference-in-differences method to establish the empirical link. In their main findings, fiscal strain matters, the size and sign of the fiscal shock matters especially under fiscal strain, and the country size matters. But there is no evidence for connection between trade openness and fiscal policy transmission, which is actually somewhat different from the view propounded in their previous papers.

Given theories on link between openness and fiscal policy transmission we have, the constant elasticity substitution assumption hardwires the openness to the ease of reaching for foreign goods to smooth consumption via risk sharing. This is a very strong force having quite clear cut predictions about how the openness and transmission of fiscal policy to consumption translate to other variables. So it might be important to think about how we could reconcile this strong prediction with the finding of no connection between trade openness and fiscal policy transmission. One way to think about it is that there are a lot of heterogeneities across countries in terms of assumptions that matter for this transmission, potentially, co-variation with openness. On the empirical side, results in an earlier version of the paper are very different. There are two main differences. In the earlier version, fiscal rules do not vary by country and have more variables. So which variation accounts for this huge difference? In addition, many countries in the sample part of EU are typically very open economies, so I suggest the inclusion of a control for that, and perhaps other obvious things that might co-vary with openness.

**General Discussion:**

Lee: I have a question about the way to construct the innovation and use it in the nonlinear estimation.

Nelson: The difference between transitory and permanent shocks will yield different predictions, but there is no distinction in the analysis.

Fratzscher: This approach is an unconditional analysis of fiscal policy shocks on the trade balance.

Engel: There is no expected future output gap in the estimation, but this is an important factor to determine the fiscal policy effects on current account. It may affect other variables.

### ***Domestic Labor Market Rigidity and Current Account Adjustment***

Jiandong Ju (University of Oklahoma and IMF) and **Shang-Jin Wei** (Columbia University)

#### **Abstract:**

This paper aims to provide a theory of current account adjustment that generalizes the textbook version of the intertemporal approach to current account and places domestic labor market institutions at the center stage. In general, in response to a shock, an economy adjusts through a combination of a change in the composition of goods trade (i.e., intra-temporal trade channel) and a change in the current account (i.e., intertemporal trade channel). The more rigid the labor market, the slower the speed of adjustment of the current account towards its long-run equilibrium. Three pieces of evidence are provided that are consistent with the theory.

#### **Discussant's Comments by Akito Matsumoto (International Monetary Fund):**

The paper provides a new theory of current account adjustment by using the Heckscher-Ohlin-Samuelson (HOS) model and then, introducing costs to trade and capital flows and labor market rigidity into the model. The HOS is two goods trade model. When the home country is capital-abundant and given no specialization, the home and foreign countries produce both labor-intensive Good 1 and capital-intensive Good 2, where the home country is capital-abundant, the home country imports Good 1 and exports Good 2. If capital is mobile with free trade, then capital allocation is indeterminate. So some frictions are needed. When costs to trade and capital flows are added, there is corner solution: no trade or no capital flow, which contrasts with Obstfeld and Rogoff (2000). When labor market rigidity is introduced, smooth capital flow is generated. Then, the paper provides evidence on labor market rigidity, trade structure, and the rate of current account convergence, and volatility. However, evidence is too strong in a sense that t-statistic is around two. Other questions are as follows. The use of shocks to the capital stock is a little surprising. It might be okay in trade models. In business cycle models, it would be better to consider shocks to something else, such as technology shocks and shocks to labor. The use of iceberg costs in capital flows is not typical in international business cycle models. The problem with iceberg costs is that the return on investment is constant. Why not incorporate typical adjustment costs to investment? Is the trade cost is small relative to the cost of capital flows? For instance, isn't it easy to send money rather than send goods? Overall, I like the new theory in this paper very much which differs from typical international business cycle models in its relative simplicity. Moreover, this new theory has some empirical support and interesting linkages between labor market rigidity and current account adjustment.

**General Discussion:**

Dekle: Future extension to a more dynamic setting instead of comparative statistics.

Mann: Labor market rigidity will not only generate volatility of the adjustment, but also the small level of current account deficit. There is a missing part of capital flows in the discussion of current account.

Corsetti: The authors should point out the connection between BKK model and current paper.

***Global Dispersion of Current Account: Is the Universe Expanding?***

Hamid Faruqee (International Monetary Fund) and **Jaewoo Lee** (International Monetary Fund)

**Abstract:**

This paper reexamines the global distribution of current accounts viewed from a longer term perspective. Using a panel of over one hundred countries that comprise over 95 percent of world output, the analysis establishes a set of “stylized facts” regarding the individual and collective behavior of current accounts over the past four decades. In particular, we examine the dispersion properties of external imbalances and interpret these empirical regularities in the context of increasing openness in trade and financial flows - often referred to as “globalization.” Our findings are as follows. The universe of current accounts has been expanding over the past half century. In other words, in a context where global gross financial flows have grown rapidly, net flows have also increased (on a sustained basis) to individual countries. Rising dispersion is also found to be closely associated with increasing financial integration of the world economy, among other things. Global imbalances though have run well ahead of underlying dispersion trends.

**Discussant’s Comments by Hiro Ito** (Portland State University):

Broadly speaking, this paper is composed of two parts. The first one is a statistical analysis about cross-sectional behavior of current account balances across different countries. The second part tries to explain empirically what can and what can not be explained by global trends. The cross-sectional finding is that the universe of current accounts is expanding, so that there is increasing cross-sectional dispersion of current account. The findings in the second part are that correlation between net foreign asset and current account balance is positive, and current account balances seem to be persistent across most of countries, meaning that the rising dispersion of current account balances is closely linked to global financial integration. At the same time, the paper finds some evidence regarding the stationarity of current account balances across countries, implying that the intertemporal budget constraint is satisfied.

I think that this paper is interesting and insightful. And, it is unique in a sense that it focuses on dispersion of current account balances, in contrast to the many papers that have examined the level of current account balances. It is also successful in that it

provides solid evidence that current account balance dispersion has been increasing over last few decades. However, I think care needs to be exercised when interpreting the empirical analysis in the second half of the paper. In this empirical exercise, it is still important to control for currency crises or current account reversals. The reason is that while current account reversals may not be that frequent in the data set, they might result in some kind of Peso problem effect. That is, infrequent events may affect the behavior of economic agents, so that countries may behave differently just because of infrequent current account reversals. The paper focuses on the effects of trade openness and financial openness, but why not control for financial development. Other papers have found that behavior of current account balances seems to be different between industrialized countries and developing countries, but the empirical exercises in this paper are run for the entire sample. So it is a good idea that exercises are done for different categories.

**General Discussion:**

Matsumoto: Perhaps the authors should check the results for levels as well, not just first differences.

Mann: How do you reconcile your results with Engel and Rogers (2008) in relation to Feldstein-Horioka.

Chinn: Has CA dispersion always been increasing? The authors should think about what is being imposed on the constant term in the regressions. Can you explain the effect of trade openness? These results are counterintuitive and merit explanation.

***Can International Productivity Differences Explain U.S. Current Account Deficits?***

Suparna Chakraborty (Baruch College, CUNY) and **Robert Dekle** (University of Southern California)

**Abstract:**

An influential explanation for the recent rise in the U.S. current account deficit is the boom in U.S. productivity. Using a two country general equilibrium model, this paper quantitatively shows that the gap in productivity growth between the U.S. and the "rest of the world" cannot explain the U.S. current account deficits, especially in the 1980s and the 2000s. This is because on a GDP-weighted basis, the "rest of the world" actually had higher productivity growth during these periods, and standard macroeconomic models would predict an outflow of funds from the U.S. to the rest of the world, and a consequent U.S. current account surplus. We show that changes in the degree of global financial integration can help explain this anomaly in U.S. current account behavior. We find, however, that our model overpredicts the growth in U.S. GDP in the 1990s and 2000s.

**Discussant's Comments by Nelson Mark** (University of Notre Dame):

Chakraborty and Dekle (2008) argue that foreign TFP growth has been higher than the US, so the US current account deficit cannot be explained by high TFP growth. Instead they ask what changes in the rest of the world's cost of investing in the US

must have been to explain the US current account 1980-2003. Their results for the cost match common sense and other measures of financial liberalization. However, they may be open to the criticism that they explain too much with their cost parameter. They paper should make it clear that they are not performing a calibration exercise. More importantly, they should endogenize the cost parameter and explain why we have seen such changes, instead of taking it as an exogenous result. Detrending TFP is also an issue. The TFP growth in their paper are linearly detrended, but when using HP filter detrended data I get different results for the implications for relative TFP growth between US and the rest of the world.

**General Discussion:**

Chakroborty: The 2% linear trend seems to be consensus. However we should check other detrending methods for robustness. We are already working on endogenizing financial liberalization costs.

Engel: Why focus only on the US current account. Other countries seem to have different stories. It is strange that high productivity growth country wants to lend to the US, although it seems to work in their model.

Rogers: The productivity growth differentials explanation is controversial. Not only detrending, but other issues such as expected versus ex post productivity growth must be addressed.

Matsumoto: For some countries such as Japan, hard to believe that investing costs have been going “down.”

*Expected Consumption Growth from Cross-Country Surveys: Implications for Assessing International Capital Markets*

**Charles Engel** (University of Wisconsin) and John Rogers (Federal Reserve Board)

**Abstract:**

This paper uses a unique survey data provided by Consensus Forecasts to provide some direct evidence on the building block of the present-value model (PVM) of the current account, the Euler equation for the household. In the simplest versions of the PVM, if capital markets are well integrated, all households in the world face a common world interest rate. It follows that under the constant intertemporal rate of substitution assumption, expected consumption growth should be equalized across countries. However, we find that expected consumption growth is not equalized across countries. We also explore two alternative explanations for this finding. The first posits that the inequality in expected consumption growth rates arises because households in each country in effect face different ex ante real interest rates. The second hypothesis is that there are significant credit constraints, so that expected consumption growth rates are not determined by ex ante real interest rates, but instead are driven largely by expected income growth. The empirical evidence strongly supports the latter hypothesis.

**Discussant's Comments by Andrea Ferrero** (Federal Reserve Bank of New York):

If international capital markets are well integrated, with some restrictions on preferences (expected) consumption growth should be equalized across countries. However, this is strongly rejected in the data. Using consensus forecast data, Engel and Rogers (2008) provide two potential explanations and evidence for each. The first is that ex ante real interest rates are different across countries, and the second is that the intertemporal Euler equation fails, so that consumption growth follows income growth rather than interest rates. They argue that the data supports the latter hypothesis, and their analysis survives alternate specifications. While their argument is based on the fact that expected consumption growth is correlated with expected income growth over a ten year horizon, I also find strong correlation even at the one year horizon. One may also question the quality of the consensus data, but it seems to be consistent with the consumption-income growth regressions in Lewis (1996). That said, their argument presents two major issues for theory. The strong correlation between consumption and output growth may not be so much of a challenge as the apparent near zero correlation between consumption and interest rates. This is a well known problem in finance, and the key issue is the low volatility of consumption. Potential ways to resolve this issue may be to modify preferences or introduce endogenously incomplete markets.

**General Discussion:**

Engel: It is important to remember that our analysis is based on expected, not ex post consumption and output growth.

Lee: It's a mystery that economists keep trying to link consumption to the standard Euler equation when we already know that it takes quite a lot of alterations to make it work.

Mann: The US current account shows that consumption and output growth have deviated for more than 25 years. Maybe a 10 year horizon is too short. In a BKK simulation, consumption volatility is much smaller than output volatility -- maybe 1 year horizon is too long.

Matsumoto: Should check if survey data is asking about only household consumption growth.

Rapporteur: Deokwoo Nam

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