Discussion of
“Excess Savings and Twin Deficits: The Transmission of Fiscal Stimulus in Open Economies”
by Rishabh Aggarwal, Adrien Auclert, Matthew Rognlie and Ludwig Straub
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The HANK framework has become a leading framework for the analysis of both monetary and, especially, fiscal policy transmission in closed economy. What are the implications of HANK for open economy dimensions such as the magnitude and the composition of current account deficits? In particular, what were the open economy implications — for capital flows, current account imbalances and exchange rate adjustment — of the massive fiscal policy response to the COVID-19 pandemic?

The current paper addresses these questions by adopting a version of an open-economy HANK model developed in the earlier work of the authors, and which features household heterogeneity in terms of wealth and marginal propensity to consume, nominal wage rigidities, and home bias in consumption that leads to equilibrium real exchange rate dynamics. The paper then asks what are the implications of a HANK framework for current account adjustment in response to a pandemic shock and the fiscal policy that accommodated it. In my discussion, I instead ask what are the patterns of current account and exchange rate adjustment in response to these shocks in the data, and what are the likely first order theoretical mechanisms needed to explain them.

HANK model provides sharp intuitive predictions for the macroeconomic response of aggregate savings to a differential fiscal transfer shock across countries, as summarized in the concluding Figure 14 in the paper. A larger local fiscal transfer turns into increased local

1 The paper also provides a detailed reference list for both closed-economy and more recent open-economy HANK literature.
consumption expenditure by high MPC agents, spread over time, and results only in a small medium-term increase in private savings among bottom 80% of the households in terms of wealth. In contrast, top 20% of households globally increase their savings considerably, and this international spread of high-wealth private savings sustains the increased home current account deficit. These equilibrium dynamics are associated with an elevated world interest rate, as well as an appreciated home currency due to home bias in local consumption.

The paper uses microdata from J.P. Morgan Chase Institute on private checking account balances to show that the three waves of fiscal stimulus in the United States in 2020–21 were indeed associated with the predicted patterns of savings dynamics among top-20% and bottom-80% of households (see Figure 1), providing support for the HANK mechanism. In my discussion, instead, I focus on the aggregate data series and cross-country comparisons, extending the analysis in Section 5 of the paper.

**International macroeconomic dynamics** We first examine U.S. current account dynamics displayed in Figure 1 here. The United States have run a series of unprecedented current account deficits in the 2000s reaching a peak of 6% of GDP just before the 2008–09 Global Financial Crisis (GFC), at which point the deficit shrunk to 2% of GDP and remained there through 2010s. Since the start of the pandemic in the end of 2019, there was indeed an increase in the U.S. current account deficit from 2.2% in 2019 to 2.9% in 2020 and 3.6% in 2021. While this is a noticeable increase, the 2020–21 current account deficits are by no means unusually large in historical perspective. Indeed, one may wonder whether 2010–19 were a special period of low current account imbalances due to general deleveraging of the economies after the GFC which ended with the fiscal expansion of 2020–21.

We next examine the dynamics of the U.S. dollar nominal exchange rate against a basket of major currencies displayed in Figure 2 here. The 2008–09 GFC was associated with strong and persistent appreciation of the dollar triggered by the international capital flight to safety
towards the U.S. treasury bonds. The sharp economic slowdown from the pandemic in early 2020 was also associated with a U.S. dollar appreciation on impact, albeit considerably smaller than that in 2008–09, which then quickly mean reverted and turned further into a mild depreciation of the dollar, all within 2020 and before the second and third waves of fiscal stimulus. Overall, the limited swings in currency market, perhaps, suggest that exchange rates were not the main mechanism of adjustment to the large pandemic shocks.

![Nominal Broad U.S. Dollar Index]( fred.stlouisfed.org)

**Figure 2: U.S. dollar nominal exchange rate (trade weighted against major trade partners)**

Global interest rates, of course, also remained at their zero levels which persisted throughout 2010s at least since the GFC. Instead, the unprecedented nature of the pandemic crisis is clearly visible in the National Income Accounts and, in particular, in personal consumption expenditure, gross domestic product and investment, which all declined sharply and then partially recovered in 2020. What is particularly striking about 2020 is the very sharp decline in consumption, a series that remained largely smooth through the 2008–09 GFC. This is not surprising given the nature of the pandemic crisis which limited consumer behavior and, in particular, the ability to safely obtain many personal services. What I emphasize here is that we did not observe any comparable sharp swings in the international dimension of the data, that is neither in exchange rates, nor in current accounts.

Lastly, a quick look at the international comparisons in Figure 3 suggest that the United States were not an outlier among the rich countries in terms of the current account response. The U.S. had a comparable deterioration in the current account to Japan, Germany, France, Spain and Netherlands, while the U.K., Italy, Canada and Belgium saw a current account improvement. Any of these movements, however, are again considerably smaller than current account “imbalances” that were a persistent feature of international capital flows in 2000s. This again suggests that the international dimension was not a key part of the macroeconomic adjustment mechanism to the COVID pandemic, which was largely a symmetric set of shocks across all developed countries.
**Intertemporal approach to current account** Next, I briefly consider theoretical implications of a neoclassical model that features Ricardian equivalence — the intertemporal approach to the current account, as laid out in Obstfeld and Rogoff (1996, Ch. 1). The national income accounts (NIPA) definition of the current account can be formalized as:

\[ CA_t = r_t B_t + (Y_t - C_t - I_t - G_t), \]

where \( r_t B_t \) are net factor income from abroad, \( Y_t \) is GDP, \( C_t \) is private consumption, \( I_t \) is investment, and \( G_t \) is government consumption. Note that the term in brackets is net exports, \( NX_t = Y_t - C_t - I_t - G_t \), and thus current account differs from net exports by net factor income from abroad. In other words, net exports characterize net movement of goods across borders, while current account characterizes net capital flows. We, therefore, can write the accumulation of net foreign assets of the country as:

\[ B_{t+1} - B_t = CA_t = S_t - I_t, \]

where \( S_t = r_t B_t + Y_t - C_t - G_t \) are national savings. In other words, an excess of national savings over investment results in capital outflows, which in turn results in net foreign asset accumulation, and vice versa.

Net foreign assets of the country could be held by private agents or by the public sector. With some simplification, we can write the evolution of private assets \( B_t^p \) and public debt \( D_t^p \) as follows:

\[ B_{t+1}^p = (1 + r_t) B_t^p + Y_t - T_t - C_t - I_t, \]
\[ D_{t+1}^p = (1 + r_t) D_t^p + G_t - T_t, \]
where $T_t$ are net transfers from private sector to the government equal to the difference between collected taxes and government transfers. Net foreign assets are thus $B_t = B_t^p - D^g_t$. We are interested, in particular, whether the pandemic policy response of increased transfers ($T_t \downarrow$) and government debt accumulation ($D^g_{t+1} \uparrow$) had an impact on the current account.

A useful benchmark to make further progress is the permanent income hypothesis under Ricardian equivalence. In this case, and assuming $r_t \equiv r = 1/\beta - 1$, consumption must equal the expected disposable permanent household income:

$$C_t = rB_t + \bar{Y}_t - \bar{I}_t - G_t = rB_t + \mathbb{E}_t \sum_{j=0}^{\infty} \frac{Y_{t+j} - I_{t+j} - G_{t+j}}{(1 + r)^j},$$

where the first term is the flow value of net foreign wealth and the second term is the expected present value of net household income equal to the difference between real GDP and investment and government consumption. Ricardian equivalence implies that households’ choices are shaped by aggregate net foreign assets $B_t$ and the path of government consumption expenditure $G_t$, and not by government debt $D^g_t$ or the path of taxes and transfers $T_t$.

Substituting the expression for permanent-income consumption into the expression for current account we obtain the fundamental current account equation (Obstfeld and Rogoff 1995):

$$CA_t = (Y_t - \bar{Y}_t) - (I_t - \bar{I}_t) - (G_t - \bar{G}_t).$$

This equation has simple, yet powerful, implications. In particular, current account deteriorates when output is below its long-run expected average level and investment and/or government consumption expenditure are above their long-run expected average levels. Furthermore, current account does not depend on taxes, transfers and government debt — a consequence of Ricardian equivalence. An increase in transfers and government debt result in reduction in private savings, but do not affect real allocations including the path of current account and net foreign assets. While there is abundant evidence that Ricardian equivalence does not hold in general, we evaluate below whether it provides a useful approximation for thinking about international dimensions of the response to the pandemic shock.

To summarize, the neoclassical intertemporal approach to the current account suggests that a pandemic shock that resulted in a decline in output $Y_t$ and an increase in government consumption $G_t$ should lead to a current account deficit, while changes in fiscal transfers $T_t$ should not affect the current account. Note however that global current account — global savings net of global investment — must be balanced at all times, which we write as $CA_t + CA^*_t = 0$, where * denotes the rest of the world. Since all countries experienced a decline in output it is not possible for all countries to run a current account deficit in response to a pandemic shock. Indeed, interest rates must adjust — in this case increase to offset in-
Figure 4: Current account against GDP and government consumption expenditure

Note: Left panel projects current account on GDP and the right panel project current account on government consumption expenditure. All variables measured as change in 2020 relative to 2019 scaled by GDP in 2019. Worldbank WDI database. Each dot corresponds to one of the 40 high income countries in the sample. $\beta$ is the slope coefficient with its standard error in brackets.

Increased global desire to borrow — to ensure equilibrium in the international financial market. Nonetheless, countries that experience larger declines in output $Y_t$ or larger increases in government consumption $G_t$ are the ones that we expect to see their current accounts deteriorate, which is a testable implication of the model.

**Another look at the data** The authors describe the empirical relationship between changes in current account and government debt accumulation in the cross section of developed countries in 2020 (see Figure 11 in the paper). Here the picture is that of a glass half full or half empty. Indeed, there is some relationship between current account deterioration and fiscal deficits which is quantitatively consistent with the predictions of a HANK model. At the same time, this relationship is weak, and the hypothesis of no statistical relationship cannot be rejected at any conventional significance level. Therefore, the data do not reject predictions of a Ricardian model as well. Furthermore, the authors show that fiscal deficits do not crowd out investment and result in additional private savings — somewhat less than one-for-one consistent with HANK, but again not statistically different from the full offset predicted by a Ricardian model.

We now look at two additional implications of a neoclassical model, namely the association between current accounts, output declines and government consumption expenditure, as we report in Figure 4. We use the data from 2019–20 on OECD countries from Worldbank’s WDI database, and we regress the change in the current account balance $\Delta CA_t / Y_{t-1}$ first

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2The data, however, does not feature increased interest rates during the pandemic, which is likely due to a combination of two different forces: (i) precautionary savings, decreased safe rates and increased risk premia due to uncertainties associated with the pandemic and (ii) consumption restrictions (and thus excess savings) which were the source of output declines rather than the opposite. Both of these forces can be modeled in a reduced form as a patience shock that results in lower consumption and greater savings, and a decline in the interest rate as a consequence.
on the change in GDP $\Delta Y_t/Y_{t-1}$ and second on the change in government consumption expenditure $\Delta G_t/Y_{t-1}$, all as a share of the pre-pandemic GDP. We see strong and statistically significant relationships between these variables, as predicted by the simple current account theory. Specifically, current accounts deteriorate more in countries that have larger declines in output and larger increases in government consumption expenditure. Furthermore, these relationships are statistically strong and, in particular, stronger than the statistical association between current account and fiscal deficits reported in the paper.

Conclusion  My take from this analysis is that a baseline neoclassical model with Ricardian equivalence does a surprisingly good job at accounting for the main international macroeconomic features of adjustment to the pandemic shocks, at least as a first approximation. Additional features such as sticky prices and home bias appear to be of limited importance in understanding international dimensions of transmission in this episode. It is, of course, interesting to evaluate whether these ingredients improve our understanding of the differential exchange rate and inflation dynamics to the extent distinct asymmetries across countries can be identified for these variables.

Household heterogeneity and non-Ricardian features central to HANK models are essential to make sense of the micro-level consumption and savings dynamics. At the same time, I remain to be convinced that these features have first order implications for aggregate savings and current account dynamics at the country levels during the COVID pandemic. This is not to say that I am generally skeptical about usefulness of HANK’s application to international transmission and business cycles. It is rather a consequence of the particular nature of the pandemic shock, which was driven by a large fiscal expansion to support private incomes in response to severe consumption (and hence output) restrictions imposed by the pandemic. This was largely a set of symmetric shocks across all developed countries, and consequently the international dimension of the response via current account and exchange rate adjustment was limited, and thus both Ricardian and HANK models can be consistent with these aggregate patterns.

It is also conceivable that HANK models, while similar in terms of aggregate international implications, predicts important distributional differences at the micro level. We provide such an example in Itskhoki and Mukhin (2022) where we study the policy of domestic financial repression in response to capital outflow shocks. While aggregate implications are the same in a representative and heterogeneous agent models, the predictions of these models differ vastly in terms of desirability of financial repression. While financial repression is unambiguously welfare-reducing in a representative agent model, it is redistributive in a heterogenous-agent model and improves welfare when the planner puts sufficient weight on poor hand-to-mouth agents who benefit from exchange rate appreciation as a result of repressed savings of the Ricardian agents.
References

