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FPAS Mark II Financial-Cycle Gaps

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by Vahe Avagyan, Hayk Avetisyan, and Martin Galstyan[1]

ABSTRACT

All financial crises are preceded by the combination of an excessive credit expansion and asset price bubble. The second criteria was clearly established with an astronomical increase in asset prices during the COVID-19 pandemic in the US. Soon after the collapse in equity prices in the initial phase of COVID and its uncertainties, equity prices shot off to Mars and housing prices shot to the moon. These, in combination with an increase in financial savings, led to an expansion of the household balance (including non-profit organizations) sheet of $36 trillion between the end of 2019 and the end of 2021. On the liabilities side, the U.S. household balance sheet does not seem to have been associated with excessive leverage in response to the rise in asset prices, in contrast to the pre-GFC era. However, as COVID-19 uncertainties diminish and precautionary savings decline, conditions may be ripe for households to consume part of this accumulated wealth via the credit market (driven by historically low real interest rates). Macroprudential policymakers need to be more concerned about this dangerous mix of high asset prices and excessive credit well before they emerge, highlighting the need for a framework to assess safe levels of debt. This paper is devoted to the estimation of financial cycle output gaps (FCMOD) that can help analyze these issues, albeit in a simplistic manner that does not try to capture the full complexity of the financial system. FCMOD projections are used as inputs into the monetary policy model (MPMOD) medium-term forecasts of potential output in the associated sister paper as FCMOD tends to outperform the traditional monetary-policy-relevant specification in predicting the medium-term projected level of GDP. This paper provides updates of a parent paper for the United States and pulls together analysis from the Global Forecasting School during the COVID-19 pandemic.

ACKNOWLEDGMENTS

We would like to thank the leadership and Board of the Central Bank of Armenia for their leadership and support in exploring new possibilities for monetary policymaking. Additional thanks to CBA Deputy Governor Nerses Yeritsyan for his long-standing innovative thinking in pushing the Board and the staff to move away from a baseline-focused approach. The development of the proposals made in this paper has immensely benefited from their contributions and critical thinking. We thank John Taylor, Michael Bordo, and Mickey Levy for providing comments on these proposals at Better Policy Project seminars. We also thank David Archer, Archil Mestvirishvili, Shalva Mkhatrishvili, and Lawrence Schembri for their encouragement and continued insights provided at these seminars. See www.thebetterpolicyproject.org for a list of acknowledgements of people that were critical in the development of published endogenous policy baseline projections—the current gold standard for monetary policymaking that we wish to modify in order to take better account of uncertainty—at the Bank of Canada, the Reserve Bank of New Zealand, and the Czech National Bank, as well as several central banks that represented the second generation of FPAS Mark I.

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TABLE OF CONTENTS

I. INTRODUCTION

Laxton and others (2019) clearly lay out the differences between potential output relevant for monetary policy and trend or sustainable output relevant for financial stability analysis. This paper updates the results within the context of the COVID-19 pandemic and its associated outlook for the US economy. In the initial stages of COVID-19 pandemic, global equity prices fell 30-35% in response to massive increases in uncertainty. However, with the massive expansion of both fiscal and monetary policy that drove real 10-year bond rates and 30-year mortgage rates to extremely low levels, this resulted in a massive asset price bubble that led the household balance sheet to rise by $35.5 trillion, as shown in Table 1 below. The conditions were set for a major financial crisis. The 10-year bond rates of -1% (based on the indexed bond market) were below the sustainable long-term growth rate of the economy (estimated around 1.7-1.8%),[2] and nominal 30-year mortgage rates were below 3%, which represented incredibly unsustainable levels that would have encouraged households to take on greater and greater debt. This did not appear to be associated with high and dangerous leverage ratios as a share of GDP (see Figure 6 later in this paper), but should have been very worrisome given that policies were resulting in incredibly low real interest rates, both on government debt and mortgage rates for households. This is particularly true considering that a meaningful collapse of asset price bubbles would surely lead to contractions in GDP. Had we continued down the path that led us to the enormous expansion in household financial wealth, and had there been a consumption boom that was associated with increases in leverage—as has been the case historically—that would have set the stage for the largest financial crisis in world history. Luckily, we have seen a reversal in financial conditions because of concerns about inflation, which hopefully have begun to move the economy back towards a safer and more sustainable world.

Table 1. Balance Sheet of Households and Non-Profits

Trillions of Dollars	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022
TOTAL ASSETS											
Total Assets	132.9	126.9	134.8	139.3	148.3	153.4	159.8	163.1	168.4	168.4	162.7
Quarterly Change, $		-6.0	7.9	4.5	9.0	5.2	6.4	3.3	5.3	0.0	-5.7
Cumulative Change since Q4 2019		-6.0	1.9	6.4	15.4	20.5	26.9	30.2	35.5	35.5	29.8
EQUITIES											
Equities	34.1	26.5	32.2	35.1	40.8	43.5	46.8	46.9	49.2	46.3	38.6
Quarterly Change, $		-7.7	5.8	2.9	5.7	2.7	3.3	0.0	2.4	-3.0	-7.7
Cumulative Change since Q4 2019		-7.7	-1.9	1.0	6.7	9.4	12.7	12.8	15.1	12.2	4.5
REAL ESTATE											
Real Estate	30.0	30.6	31.3	32.1	33.0	34.2	35.6	36.8	38.1	39.7	41.2
Quarterly Change, $		0.6	0.7	0.7	0.9	1.2	1.4	1.3	1.3	1.6	1.5
Cumulative Change since Q4 2019		0.6	1.3	2.1	3.0	4.2	5.6	6.8	8.1	9.7	11.2
OTHER **											
Other	68.8	69.8	71.2	72.1	74.4	75.7	77.4	79.4	81.0	82.4	82.9
Quarterly Change, $		1.0	1.4	0.9	2.3	1.3	1.7	2.0	1.7	1.4	0.5
Cumulative Change since Q4 2019		1.0	2.4	3.3	5.7	6.9	8.6	10.6	12.2	13.6	14.1

* Trillions of dollars

** Other includes the components of household net worth beyond equities and real estate, including bonds, debt securities, mutual funds, life insurance, and so on. Refer to table B.101 of the Financial Accounts of the United States.

Source: Financial Accounts of the United States - Z.1, Table B.101

[2] Based on FOMC projections of longer-run economic growth, September 2022. See https://www.federalreserve.gov/monetarypolicy/fomcprojtabl20220921.htm.

To put this into further perspective, the accumulated value of US government debt is $31.3 trillion as of November 2022, a number so large that many casual observers believe it might take decades to pay off.[3] Increases in government debt in advanced economies, including but certainly not limited to the US, are very worrisome, as this higher accumulation of debt should be expected to raise the global equilibrium real interest rate significantly, and potentially throw the world back into a situation where the interest rate is above the growth rate of the economy.[4] Policymakers need to be concerned about the implications of excessive debt that could lead to fiscal crises that would surely translate into financial crises, given how much government debt is held by the financial system.[5]

The methodology of this paper makes a clear distinction between the concepts of the output gap that are relevant for price and financial stability. This paper focuses on the former and the latter is covered in a sister paper. The distinction is highly relevant for policy making and is closely related to the "leaning against the wind" (LAW) debate, where a deeper discussion about the debate can be found in the parent paper.

We distinguish the terms "trend output" for the Financial Cycle Model (FCMOD) and the concept of potential output for the Monetary Policy Model (MPMOD).[6] To construct the measures of the output gap relevant for financial-stability assessments, this paper uses a simple atheoretical model of the financial cycle.[7] This involves specifying an atheoretical model that includes a cyclical and trend decomposition for output. We use information on real property price growth and real credit growth to help measure the lower-frequency cyclical component in US GDP. For FCMOD, we use the term trend output to distinguish it clearly from the concept of potential output, which is based on the notion of imbalances between aggregate demand and supply in the goods market. We emphasize that FCMOD is an atheoretical model, as there is no theoretical basis to support a structural link between deviations of aggregate demand and supply in the goods market and growth in these two financial variables.

In addition to the importance for monetary and macroprudential policies, measures of sustainable output also have important implications for fiscal policy. Information about the sustainable or trend level of output is important to obtain measures of the medium-term sustainable tax base, a key input

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[3] See, for example, https://www.usdebtclock.org/.

[4] For studying the implications of increases in global government debt on the real interest rate, see the IMF's global models, starting with MULTIMOD, the Global Integrated Monetary and Fiscal Model (GIMF), and the more recent Flexible System of Global Models (FSGM). See Laxton and others (1998), Kumhof and others (2010), and Andrle and others (2015). In addition, for empirical estimates of the effects of government debt based on the experiences of the 1980s, see Ford and Laxton (1995).

[5] There is obviously considerable uncertainty about the equilibrium global real interest rate. Blanchard (2022), in his latest book "Fiscal Policy Under Low Interest Rates," suggests that the level of the equilibrium global real interest rate might still be below the underlying growth rate of the economy. An important area of future research is to understand the implications of uncertainty in real interest rates and its implications for safe levels of government debt. Clearly, this uncertainty about the equilibrium real rate should be taken seriously by current day policies in prevention of further accumulation of risks on the one hand, and avoiding disorderly adjustment on the other hand. This opens a perspective for a framework that relies on different scenarios in the context of risk management approach to policies (FPAS Mark II).

[6] Refer to Avagyan and others (2022a) for further detail on MPMOD.

[7] Obviously, atheoretical models are useful for surveillance and so on, but completely inadequate for designing strategies to deal with uncertainty. For the latter, one needs to not only recognize the problem of excessive leverage and an asset price bubble, but also, have an analytical framework that has sensible policy instruments that are sufficiently powerful to deal with excessive leverage. See Benes, Kumhof, and Laxton (2014a, b) and Benes, Laxton, and Mongardini (2016) for analytical frameworks that not only explain the seeds of financial crises and nasty nonlinear interactions, but also sensible policy instruments.

for fiscal policy. Using standard techniques for combining forecasts, this paper shows how to condition medium-term projections of actual and potential output on measures of trend output that can account for the financial cycle.

The remainder of the paper is organized in the following way. Section II summarizes the model. Section III updates the historical estimates for the financial cycle output gap and trend output during the COVID-19 period. Section IV provides an outlook for the financial cycle output gap based on higher frequency data and some near-term assumptions. Section V provides some concluding remarks and comments on the future research agenda. In particular, a brief comparison to other traditional estimates of credit gaps as provided by the BIS and developing an alternative conceptual framework for thinking about financial stability.

II. MEASURING THE OUTPUT GAP AND TREND OUTPUT WITH FCMOD

Following the legendary work of Hyman Minsky, financial cycles can be understood as consisting of repetitive chains of Minsky moments, or what are defined as moments of rapid instability and market collapses that follow unsustainable speculation during bull markets. According to the Minsky Cycle, "as recovery approaches full employment ... soothsayers will proclaim that the business cycle has been banished [and] debts can be taken on ... But in truth neither the boom, nor the debt deflation ... and certainly not a recovery can go on forever."[8] In periods of macroeconomic stability, euphoria sets in, and market participants begin to underestimate risk and feel incentivized to take on greater and greater risk and leverage. This, of course, generates instability, as this risk inevitably translates into losses when things like declines in asset prices, or cash flow crises, emerge. When this happens, market participants seek to deleverage and move away from risky assets; this triggers huge sell-offs that cause asset bubbles to implode and liquidity crises to develop. As people start moving toward safe assets, and stability is slowly restored, the Minsky cycle is completed, setting the stage for new optimism and further risk-taking and inevitable future Minsky moments.[9]

Moving beyond Minsky, while the empirical literature about the characteristics of financial cycles has developed quite rapidly after the GFC (see, for example, Claessens, Kose and Terrones 2011, as well as Brunnermeier and Reis (forthcoming) and the enormous amount of research that has gone into it),[10] the analytical understanding of financial cycles and their relationship with business cycles, has evolved only slowly suggesting little practical advice for policymakers responsible for monetary and macroprudential policies.[11]

Against this background, this section details a simple atheoretical model for the financial cycle. Our approach is to leverage empirical knowledge about financial cycles without taking a strong stance on underlying theory, about which there is little consensus. We refer to FCMOD explicitly as an atheoretical model and not a model of potential output. Potential and trend output, of course, are not disconnected-they both converge to the same levels in the long run, which is the only constraint that we use in the model. This underlines that sustainable output is very useful when thinking about long-term developments of the economy, but it is not the right concept for thinking about monetary policy tradeoffs.

The three observable variables of the model are the GDP, the growth rate of property prices and credit growth. In FCMOD the financial cycle output gap ($\hat{y}_t^{fc}$) is defined as the deviation of log real GDP (y_t) from its trend level ($\bar{y}_t^{fc}$):

$$(1)\ \hat{y}_t^{fc} = y_t - \bar{y}_t^{fc}$$

The stochastic process for trend output is comprised of three equations, (2)-(4), and are subject to four types of shocks:

$$(2)\ \bar{y}_t^{fc} = \bar{y}_{t-1}^{fc} + g_t^{fc} + \epsilon_{\bar{y}^{fc},t}$$

[8] See Minsky (1975).
[9] See Lahart (2007). https://online.wsj.com/public/article/SB118736585456901047.html
[10] See https://jrc.princeton.edu/people/markus-brunnermeier.
[11] For an example of a prototype model, which allows for financial crises in DSGE models, see Benes, Kumhof and Laxton (2014a, b) and Benes, Laxton and Mongardini (2016).

(3) $g_t^{fc} = 0.1g_{fc}^{ss} + (1 - 0.1)g_{t-1}^{fc} + \epsilon_{g^{fc},t}$

(4) $\hat{y}_t^{fc} = 1.0\hat{y}_{t-1}^{fc} - 0.2\hat{y}_{t-2}^{fc} + \epsilon_{\hat{y}^{fc},t} + 0.4\,\epsilon_t^{fc}$

The level of trend output $\left(\overline{y}_t^{fc}\right)$ evolves according to trend potential growth $\left(g_t^{fc}\right)$ and a level-shock term $\left(\epsilon_{\overline{y}^{fc},t}\right)$. Potential growth is also subject to a shock $\left(\epsilon_{g^{fc},t}\right)$, whose impact fades away with persistence parameter of 0.9. The output gap $\left(\hat{y}_t^{fc}\right)$ is a function of one-year lagged values of output gap and the deviation of real and potential output growth rates. The output gap incorporates a shock (ϵ_t^{fc}) with the weight 0.4, which is the common component of the shock driving both credit and property prices. The output gap is also subject to and idiosyncratic shock $\left(\epsilon_{\hat{y}^{fc},t}\right)$.

Real credit growth (Δrbc_t) and real house price growth (Δrph_t) are both modeled as autoregressive processes that gradually revert to their long-run steady-state rates (Δrbc^{ss} and Δrph^{ss}), respectively. Each of the processes has two types of innovations: one idiosyncratic, i.e. specific to that equation ($\epsilon_t^{\Delta rbc}$ and $\epsilon_t^{\Delta rph}$, respectively), and one common component that enters both equations $\left(\epsilon_{\hat{y}^{fc},t}\right)$ capturing a positive cross-correlation between credit and house prices during financial cycles.

(5) $\Delta rbc_t = 0.6^{\Delta rbc}\Delta rbc_{t-1} + (1.0 - 0.6)\Delta rbc^{SS} + \epsilon_t^{\Delta rbc} + \epsilon_t^{fc}$

(6) $\Delta rph_t = 0.6\Delta rph_{t-1} + (1.0 - 0.6)\Delta rbc^{SS} + \epsilon_t^{\Delta rbc} + \epsilon_t^{fc}$

The idea behind the commons shock $\left(\epsilon_{\hat{y}^{fc},t}\right)$ is the key in FCMOD. It appears in three equations in the model- financial cycle, real credit growth and real house price growth equations-creating a simple mechanism, which simultaneously generates a boom in output, credit, and house prices. If the high growth rate of GDP is accompanied with simultaneous rapid increase in credit and house prices, the model will deem part of the growth unsustainable. If, on the other hand, the idiosyncratic shocks explain the data better, that would point to lower systemic imbalances. This reflects one of the most robust empirical regularities about financial crises mentioned earlier.

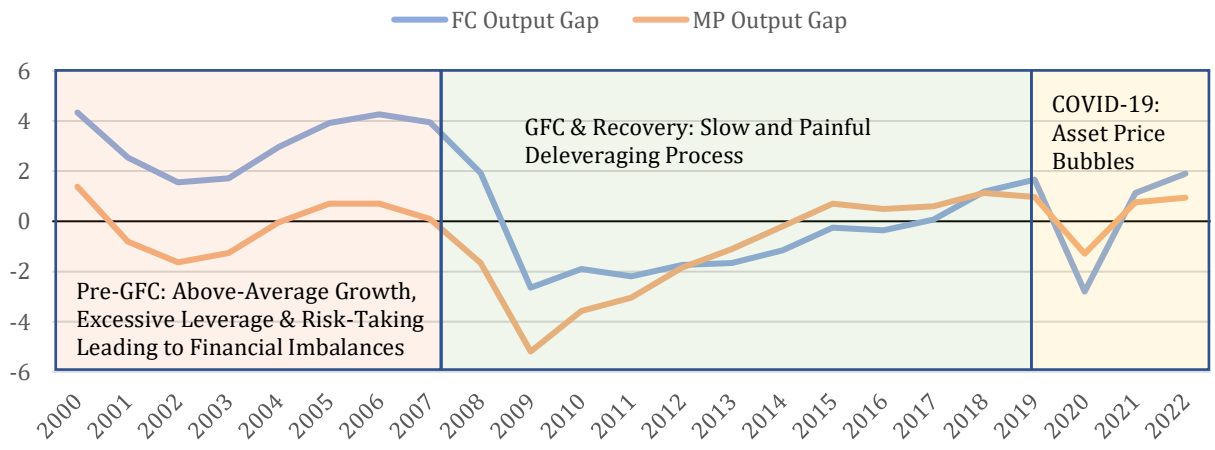
III. HISTORICAL NARRATIVE AND THE COVID-19 PANDEMIC

Figure 1 depicts the FCMOD estimates of the financial cycle and trend output growth based on the sample period of 1980-2022. It can be observed that positive phase of the financial cycle is much more prolonged compared to the MPMOD output gap. This comes as no surprise since financial cycles tend to last longer than business cycles. In addition, financial variables incorporated into the FC output gap contribute to its more prolonged buildups and sharp drops.

Corresponding to this profile for the FC output gap, trend output growth rate is much smoother compared to its MPMOD counterpart. By definition, FC trend output is neutral to the cyclical fluctuations in the financial system. As Borio (2013) claims, the main distinctive feature of finance neutral trend output is sustainability. Even when output is at its non-inflationary path (which is captured in MPMOD as potential output), it might still be unsustainable as long as the financial imbalances are building up.

While the resulting cyclical component of GDP from FCMOD is correlated with conventional measures of the output gap, the FCMOD output gaps were over double the size of the MPMOD output gaps before the Global Financial Crisis (GFC). This is consistent with the observation that financial imbalances were building up before the GFC with only modest increases in underlying inflationary pressures in the goods market.

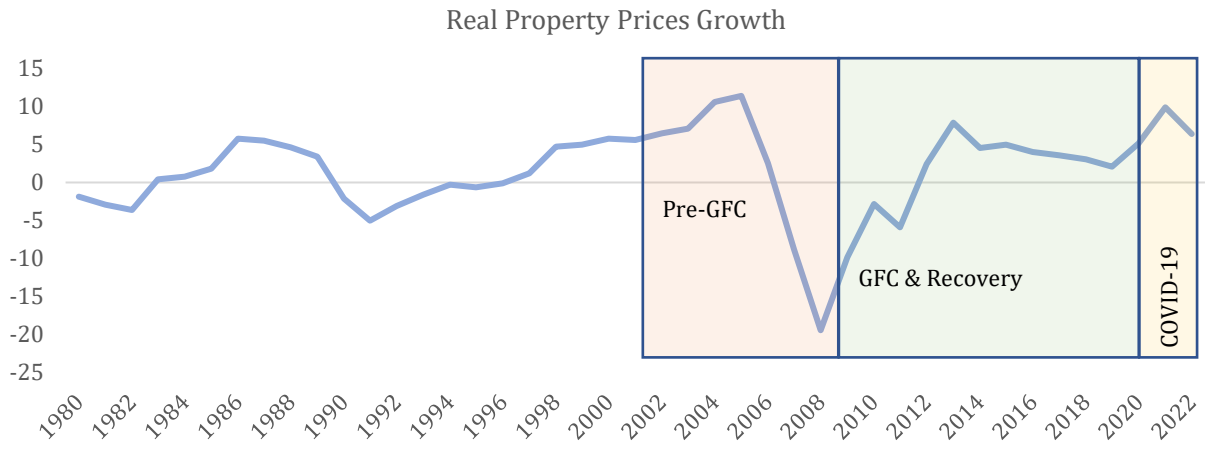
Figure 1: A Comparison of the Financial Cycle (FC) and Monetary Policy (MP) Relevant Output Gaps



Source: Author's Estimates

We turn our attention to the COVID-19 pandemic and provide some insight into how we are thinking about potential imbalances in the economy, with an estimated moderately positive FC output gap, emanating from financial markets. Look no further than the response in real property prices which saw a boom and likely bubble (although hopefully short-lived), buoyed by cheap mortgages. In this respect, the fiscal response was perhaps sufficient and more relevant for dealing with the COVID-19 shock. This is an added element as to why it may have been imprudent to maintain an ultra-easy monetary stance until full employment was reached and might be a source of financial instability moving forward as markets move markedly away from the ELB in a short time span and a large correction in house prices materialize.

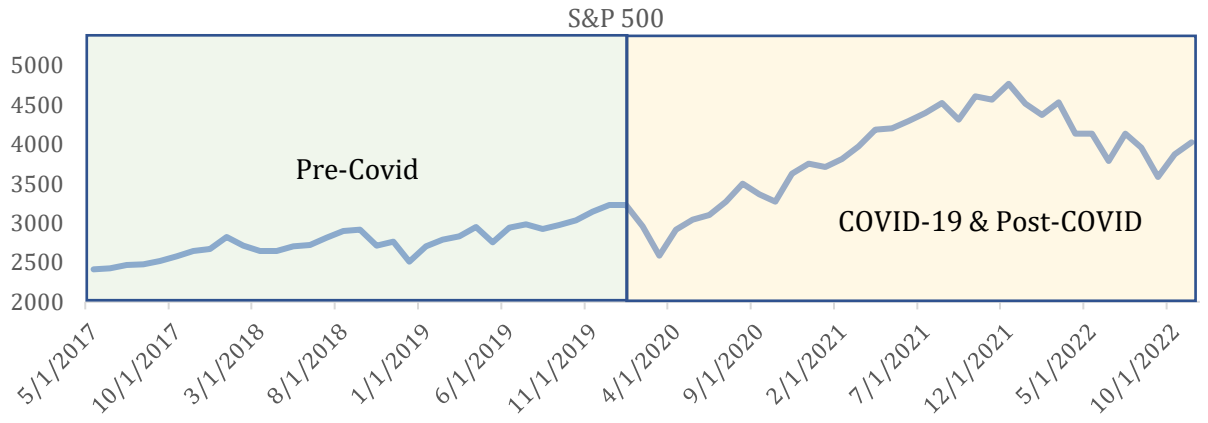
Figure 2: Real Property Prices Benefited Immensely, Sustainable?



Source: BIS, Author Estimates

Furthermore, although it is not captured explicitly in the FCMOD, equity prices saw an equally high rate of return following the initial collapse in February and March of 2020. This boom in equities have shown up in household balance sheets from high corporate equity valuations. If you were to ask someone at the time when the pandemic first began what would you expect to happen to asset prices when there is a global pandemic that leads to widespread economic lockdowns. The answer would probably be a significant downward correction and only when the uncertainty around the pandemic had diminished that a strong recovery in equities would emerge. However, this is not what ended up happening and since the COVID pandemic, the net worth of US households has risen by an enormous $27 trillion as of 2022Q2, largely on account of higher asset prices, but also a result of the accumulation of higher precautionary saving. In a forthcoming paper Tchanturia and others (2023), delve into the US consumption function and illustrate how the real wealth effects from rising equity and real estate prices over the pandemic may be a contributing factor to lingering frothy demand by US consumers as the economy exits the direct impact of regular COVID-related lockdowns.

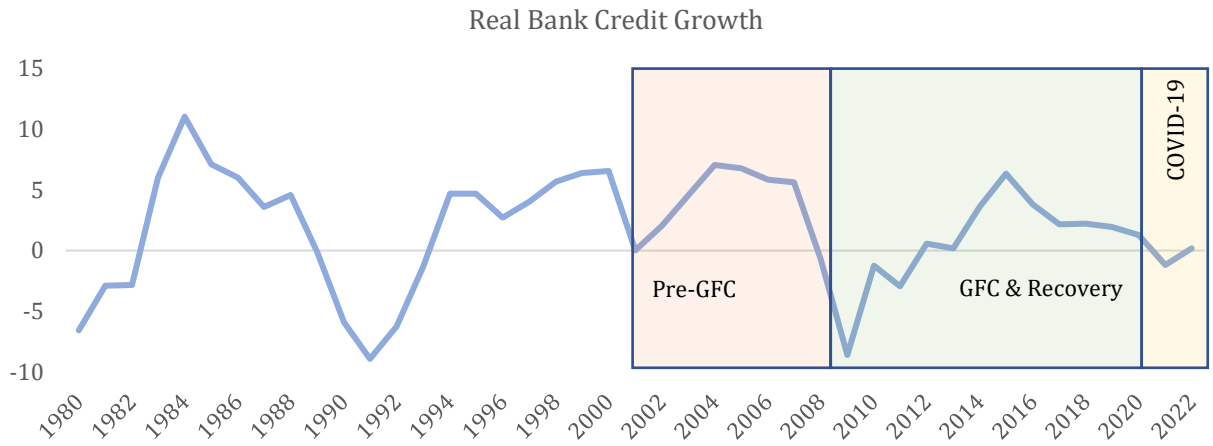
Figure 3: Equity Prices Benefitted from the "Fed Put" but that Might Change



Source: BIS, Author Estimates

On the other hand, the other main variable used in FCMOD, real credit, has not seen particularly high growth during the pandemic period. Excessive leverage in the system exemplified by previous financial cycles does not seem to be present at the current juncture. The concentrated and short-lived nature of the COVID-19 pandemic shock(s) likely did not lead an excessive amount of borrowing based on unrealistic future valuations of asset prices that we typically ascribe to the pre-GFC period.

Figure 4: Real Credit Growth, Backstopped Not Excessive

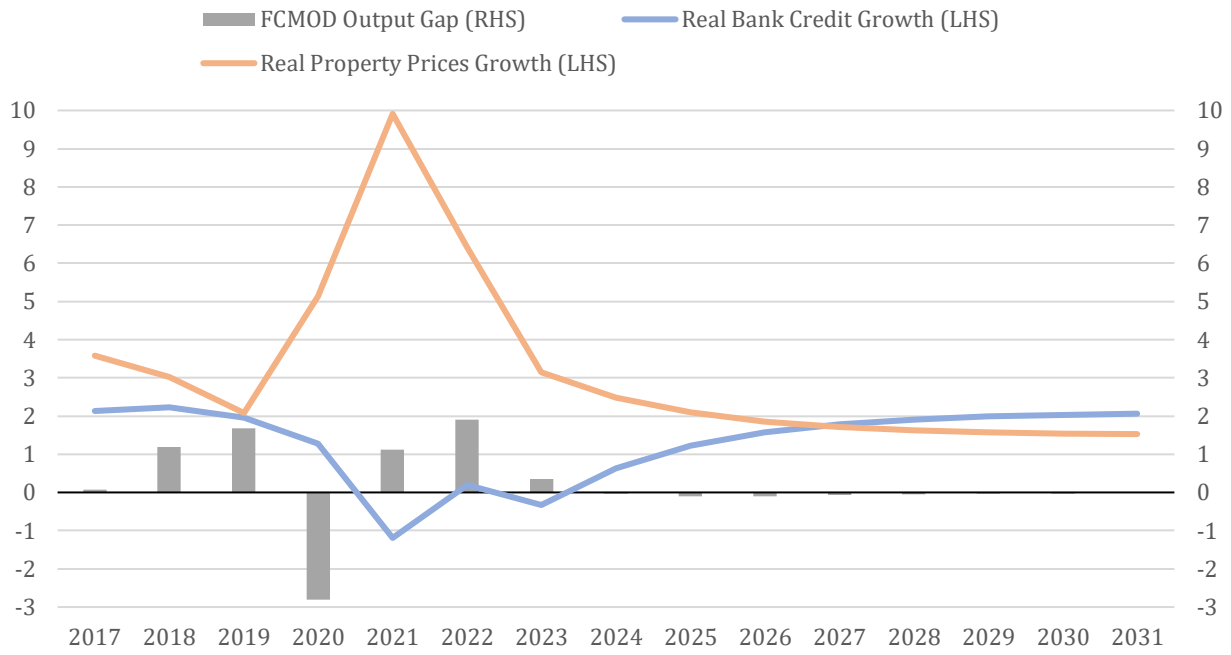


Source: BIS, Author Estimates

IV. THE POST-COVID OUTLOOK

We estimate that a moderately positive FC output gap formed during the recovery phase of the pandemic in 2021/22. However, with interest rates on the rise, the housing market cooling and credit conditions becoming tighter, as we enter 2023, these factors are likely to contribute to the financial cycle output gap closing in a meaningful way. However, as mentioned previously we are in a state of excess and perhaps real property prices could be more resilient and credit growth could pick up much stronger than we expect as uncertainty around the pandemic diminishes and macroprudential policy instruments are not adjusted sufficiently to contain an excessive credit expansion and asset price bubble.[12]

Figure 5: FCMOD Outlook, Subdued Credit and Moderating Property Prices



Source: BIS, Author Estimates

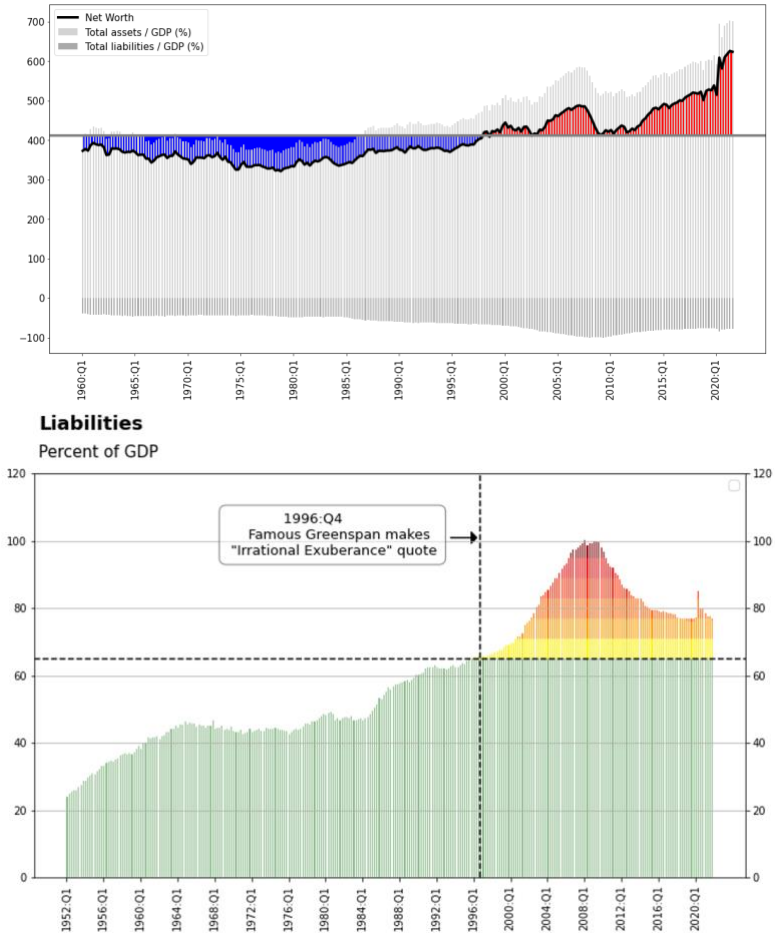
[12] Concerns about the financial system have been articulated by William White in his recent comments on FPAS Mark II at the 25th Annual Central Bank Macroeconomic Modeling Workshop. For further detail, refer to White's remarks at the following link: https://www.youtube.com/watch?v=MyuczFQSl_c&t=8s. Rajan was one of the other economists who was sounding the alarm bells about the financial system before the Global Financial Crisis. See, for example, Rajan (2005).

V. CONCLUSION AND FUTURE RESEARCH

This paper provides an update of FCMOD that utilizes financial information on real house price growth and real credit growth to help measure the cyclical component of GDP. This approach provides an estimate of the financial cycle output gap during the COVID-19 pandemic period where a rapid rise in property prices have opened a positive gap and a modest correction would be warranted to help close the gap. Indeed, this appears to be where the market is headed as house prices appear to be cooling in the second half of 2022 and we expect that to continue into 2023. Although, we have not observed a boom in credit growth over the same period, which would have exacerbated the financial imbalances, it is also true that we have never seen such a large correction in house prices that have not led to at least some financial instability.

Future research on financial stability by the GFS students includes an exploration into alternative ways for conceptualizing the problem, namely constructing a loss function for financial stability. We may think of defining a loss function to help guide the analytical framework for thinking about the objectives and main instruments of macroprudential policy frameworks, such as loan-to-value limits, minimum capital adequacy ratios, and capital buffers, etc.

Figure 6: Irrational Exuberance a Baseline for Thinking About Safe Levels



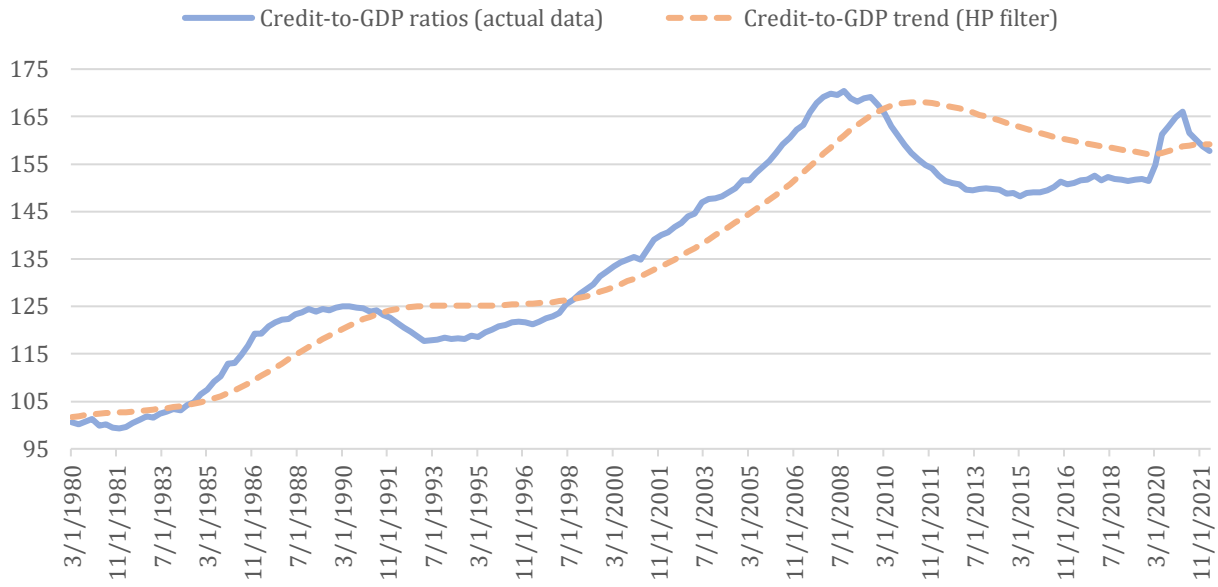
Source: The Federal Reserve System, Financial Accounts of the United States

In Figure 6, we show the net worth of US households. We identify the time when Alan Greenspan famously coined the term "irrational exuberance," which refers to investor enthusiasm that drives asset prices higher than what those assets fundamentals justify.

In terms of objectives, we may frame the loss function of our key variables as deviations from measures of the "safe" level of credit or asset prices. For financial-stability purposes, we should worry more about guarding against the large negative consequences from excessive credit or asset price expansions i.e. financial bubbles. Of course, this begs the question about how you define what is the "safe level" of debt and will be a core concept for thinking about financial stability and is subject to ongoing research. However, we provide one example concerning the US which is an important source for global financial instability with clear eras when the financial sector became "unsafe."

Another useful element to build on is to look at the credit-to-GDP gaps provided by the BIS that uses a one-sided HP filter methodology (Figure 7). Again, looking at the US credit-to-GDP trend and gap provided by the BIS shows the limitations of this strategy to elucidate analysis on financial stability. What is considered the "sustainable" level of credit, or the trend, which was clearly being influenced by the excessive levels of credit in the aftermath of the GFC which by all accounts should be deemed as an unsustainable period and therefore does not make too much sense to incorporate it into what we believe is the safe level of debt. In this vain, it probably makes sense to take a more intuitive approach for thinking about financial stability as opposed to a purely statistical one.

Figure 7: Is the HP Filter a Good Tool for Thinking About Sustainability? The Case of the US



Source: BIS

As is the case with monetary policymaking, we emphasize the importance of institutions adopting best-in-class frameworks for carrying out fiscal and macroprudential policymaking.[13] Institutions that are responsible for fiscal policymaking need to take clear stances on what are safe levels of government debt, and those responsible for macroprudential policy need to similarly take a position on safe levels of private debt. Purely statistical approaches to these ideas—which conceive of sustainable rather than safe levels of debt, and then think about sustainable debt as being a numerical percent of GDP rather than thinking critically about the implications of such a framework in the context of "tail risks," such as the interplay between fiscal and financial crises—cannot serve as a cornerstone for good policymaking.

This paper underscores the call from economists like Blanchard to begin rethinking how we conduct both fiscal and macroprudential policy. Our hope and expectation is that this paper spurs further research about these ideas of good policy in the context of thinking of safe levels of public and private debt, and catalyzes greater dialogue between policymakers and researchers as they explore ways to improve how fiscal and monetary policy is conducted, particularly in times of great and growing uncertainty.

[13] The FPAS Mark II framework for effective monetary policymaking in the context of uncertainty and nonlinearities is explored in Archer and others (2022). Additional research includes papers by Kostanyan and others (2022a) on central bank transparency, Kostanyan and others (2022b, c) on the analytical foundations for the core workhorse models for the FPAS Mark II framework, and forthcoming research by Avagyan and others (2023a-t) and Papikyan and others (2022a-b, 2023a-h) exploring further applications of these ideas in areas such as organization/institutions (e.g. transparency, human capital, etc.) and analytics (e.g. credit gaps, shadow projections, and further updates of the FCMOD and MPMOD analytical tools, and so on).

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