

driven primarily by (demand and supply) shocks to core liquidity. This suggests that core liquidity was rising (relative to GDP) as a result of deteriorating fundamentals and rising risk aversion, rather than, say, price pressures. In the post-crisis, however, the impact of liquidity on GDP turned positive again, primarily driven by demand shocks to core liquidity and, to a lesser extent, noncore liquidity, in line with a resumption of economic activity and more normal credit transmission mechanisms. The higher post-crisis demand for core liquidity reflects partly recent regulatory reforms that encourage greater reliance on core funding (e.g., Basel III liquidity requirements, Dodd-Frank Act in the United States, Capital Requirement Directive IV in Europe).

- **Lastly, the results show that demand shocks to noncore liquidity on growth are counter-cyclical while supply shocks are pro-cyclical.** The explanation for the growth effect of a positive supply shock is intuitive, as greater availability of funding at a lower cost allows banks to expand the asset side of their balance sheet and correspondingly provide more credit to the real economy. The negative effect of demand shocks may be attributable to the lagged nature of deleveraging. One scenario in which this may occur took place during the 2008 financial crisis when falling collateral prices forced financial institutions to reduce their balance sheet (i.e., to deleverage), while the availability of noncore funding fell sharply. Tightened financing conditions, in turn, further depressed GDP, exacerbating macro-financial linkages.
- The analysis suggests no statistically significant cross-country variations in the sensitivity to G4 funding shocks.

VI. CONCLUSION

Recent history has highlighted the impact of liquidity on financial and economic stability. The task of measuring and monitoring liquidity, however, is complicated by the fact that liquidity is endogenous and cyclical. By using quantity and price measures, we are able to better assess developments in liquidity conditions. Moreover, the interaction of price and quantity allows us to determine supply and demand-driven shocks underlying liquidity changes. Our preliminary work suggests that both core and noncore liabilities and the nature of the shocks—demand or supply-driven—have important effects on growth. From a surveillance perspective, our work confirms the importance of capturing liquidity creation from both traditional bank channels and the more volatile nonbank channels.

Notably, depending on the economic cycle, quantity and price information can capture different developments. The interaction between price and quantity of liquidity help to identify drivers of liquidity expansion—above the rate suggested by nominal GDP growth—as demand, or supply based. A positive demand shock would result in an increase in quantity, accompanied by a rise in price, while a positive supply shock would result in an increase in