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Housing markets and economic growth: lessons from the US refinancing boom[1]

Household spending remained unexpectedly strong in the OECD area during the 2001 downturn. One explanation is that it was supported by rising real estate values and declining mortgage rates, mainly in the English-speaking countries.[2] Such resilience was particularly remarkable for the United States, where overall household wealth declined because of falling equity prices. The US mortgage market appears to have played a significant role in this strength. There was a wave of mortgage refinancing in 2001 that was unique in both its nature and magnitude. This special feature discusses the effect of mortgage refinancing during the 2001 slowdown and the role played by changes in the structure of the market for housing finance.[3]

The 2001 refinancing boom and household spending

An unprecedented number of mortgage loans were refinanced in the United States in 2001. The estimated 11.2 million refinanced mortgages in 2001 is about twice the figure of 1998, a year that had been perceived as "extraordinary" at that time.[4]

Refinancing of mortgages can add to the effective purchasing power of households in two ways. First, through additional borrowing against an increasing value of property. Such "cash-out" or "extraction" of housing equity requires that the new mortgages be for larger dollar amounts than those being refinanced. The difference between the new and refinanced loan principals (less fees) provides immediate cash to the household. Second, when the rate

[1] We would like to thank Angelika Donaubauer for excellent research assistance. The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS.

[2] See BIS (2002).

[3] On the link between housing markets and consumption in the United Kingdom, see Aoki et al (2002).

[4] See Bennett et al (1999).

Indicators of US refinancing activity, 1997–2001						
Year	Loans refinanced (millions)	Age of refinanced loan[1]	Appreciation of refinanced property[1]		Percentage of refinancing with cash-out	Ratio of old to new interest rate[1]
			Total[2]	Annual[3]		
1997	2.8	4.0	13	3.1	62	1.07
1998	6.7	4.1	10	2.4	49	1.18
1999	4.4	5.6	13	2.2	66	1.12
2000	2.4	6.0	26	3.9	81	0.97
2001	11.2	2.6	14	5.2	54	1.18

[1] Median. [2] Total appreciation over the period between original and refinanced mortgage, in percentages. [3] Average annual appreciation over the period between origination and refinancing of the mortgage, in percentages.

Sources: Credit Suisse First Boston; Freddie Mac. Table 1

on the new mortgage is lower than that on the refinanced one, the reduced interest payments add to disposable income given the same size of mortgage. For 2001, the evidence indicates that, on balance, the first effect has been considerably larger than the second.

Cash-out of housing equity boosted disposable income ...

In 2001, refinancing gave a considerable boost to effective purchasing power through the cash-out of increased housing wealth. The principal of 54% of new mortgages was at least 5% higher than that of refinanced mortgages (Table 1), suggesting that about half of the refinanced mortgages generated net cash payouts. The median price appreciation of property refinanced in 2001 was about $25,000[5] in only 2.6 years, reflecting the surge in housing prices in 2000 and 2001.

The propensity to tap into home equity was even stronger in 2000, when an estimated 80% of refinancing transactions resulted in equity cash-out. During the six years since the previous financing, about $36,000 of additional equity had accumulated in the median refinanced house. Nevertheless, in 2001 the potential increase in effective purchasing power was much larger as the number of refinanced loans was five times higher.

... but was accompanied by rising levels of mortgage debt

Tapping home equity through mortgage refinancing thus contributed to rising levels of household debt. Mortgage debt, which accounts for two thirds of household debt, has grown by $850 billion or 19% over the past two years (Graph 1). To some extent, this increase reflects consolidation of other debt such as credit card balances. Nevertheless, instead of declining, as was the case during past recessions, household liabilities have risen to an all-time high of 106% relative to disposable income. US homeowners' equity in their households has dropped about 10 percentage points in the last decade and stands today at only 55%.

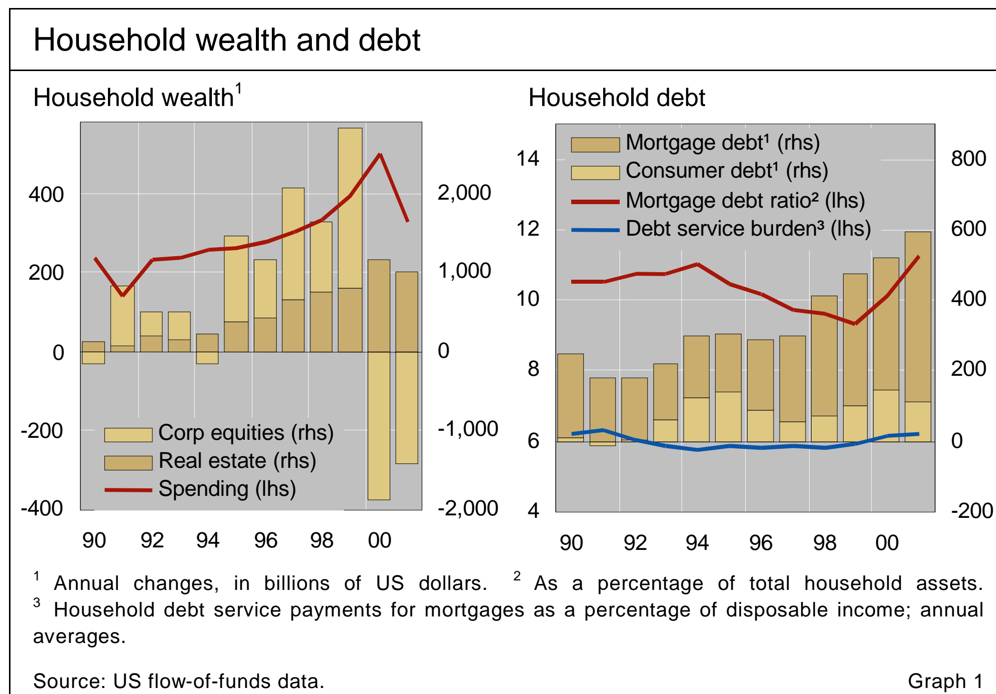
[5] The National Association of Realtors estimates that the average sale price of an existing single family home was $176,200 in 2001. Applying quarterly data (not shown here) on the median appreciation of refinanced property to this figure yields a median appreciation of $24,700. This calculation provides a conservative estimate since it does not take into account principal repayment in the interim that would increase the available cash-out.

Another consequence of the leveraging of housing equity is that refinancing, although substantially lowering the rates paid on outstanding mortgages (Table 1), has not translated into a lower debt service burden. In 2000, some households even refinanced at rates that were higher in order to generate cash-out. The cost of servicing mortgage debt relative to disposable income is now as high as it was in the early 1990s (Graph 1).

Significant effect on consumption

Mortgage refinancing seems to have played a significant role in keeping US consumption unusually buoyant through the recent downturn. Assuming that 54% of refinanced mortgages generated a net cash payout and that the full median appreciation of property refinanced in 2001 of $25,000 was cashed out, one arrives at an estimate of $150 billion of discretionary cash flow from household equity extraction. This is equivalent to 2.3% of owners' equity in household real estate (compared to $67 billion or 1.1% of owners' equity in 2000).

About half of "liquefied" housing equity is estimated to be used for current expenses.[6] In the late 1990s, an estimated one fifth of the cash-out was consumed. Another third was spent on home improvement. The propensity to consume arising out of the 2001 refinancing-generated windfall may have been somewhat higher. There is some evidence that homeowners "overreact" to higher income from housing price appreciation.[7] Taking the ratios of total current expenses (50%) and consumption (20%) as upper and lower limits, the



Household wealth and debt

[1] Annual changes, in billions of US dollars. [2] As a percentage of total household assets. [3] Household debt service payments for mortgages as a percentage of disposable income; annual averages.

Source: US flow-of-funds data. Graph 1

[6] According to the triennial Survey of Consumer Finances, 18 cents of every dollar liquefied in 1998 and early 1999 were spent on "consumer expenditures" and 33 cents on "home improvements", which is included in residential investment. About 28 cents were used for the repayment of other debts (Brady et al (2000)).

[7] See Capozza and Seguin (1996).

2001 housing equity cash-out accounted for 10–25% of the total increase in consumption.

Driving forces behind the 2001 refinancing boom

Buoyant refinancing activity in 2001, and its impact on household spending, can be seen as the result of the coincidence of lower nominal mortgage rates, declining transaction costs of refinancing, and a rapid appreciation of refinanced property.[8]

Refinancing was driven by lower interest rates ...

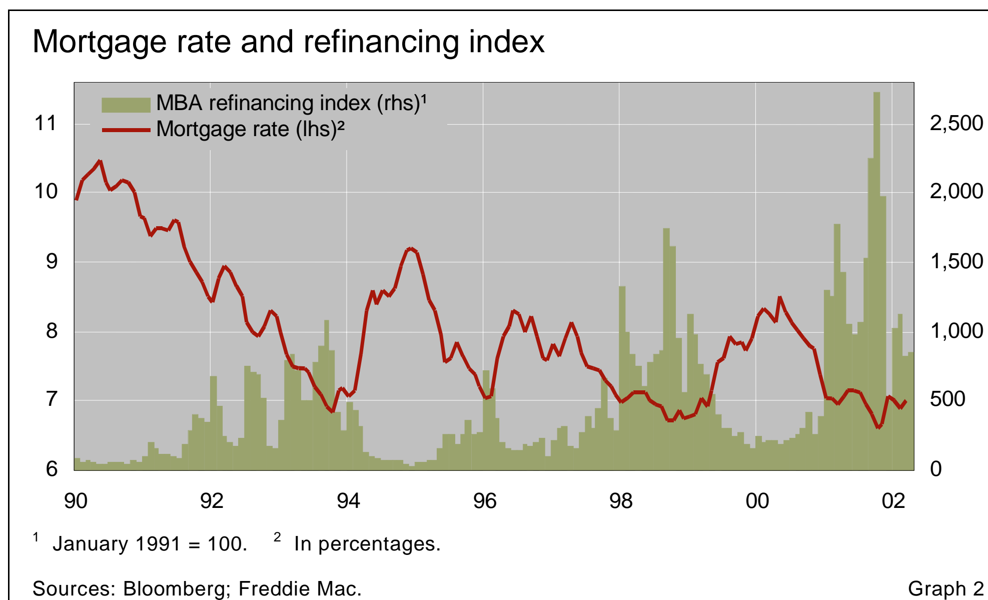
The economic slowdown in the United States provided the backdrop for a sharp fall in mortgage interest rates. In line with capital market yields in the strong investment grade range, nominal mortgage rates have trended down since late 2000, recently reaching lows not seen in three decades (Graph 2).

Declining mortgage rates make it attractive for borrowers to exercise the option to repay mortgage loans, typically without penalty, before scheduled maturity dates. However, the upsurge in mortgage refinancing during 2001 was much stronger than in earlier mortgage rate cycles. In 1998, the last time that rates went down as much as in 2001, the number of refinanced mortgages was about half of the figure for 2001. In both instances, borrowers reduced their effective borrowing rates by about 125 points by exercising the prepayment option.

... declining transaction costs ...

In addition to lower nominal mortgage rates, the transaction cost of replacing one loan with a new one – the penalty for refinancing – has declined. Homeowners have benefited from a consistent reduction in the percentage of the loan amount that has to be paid as refinancing fee (referred to as “points”;

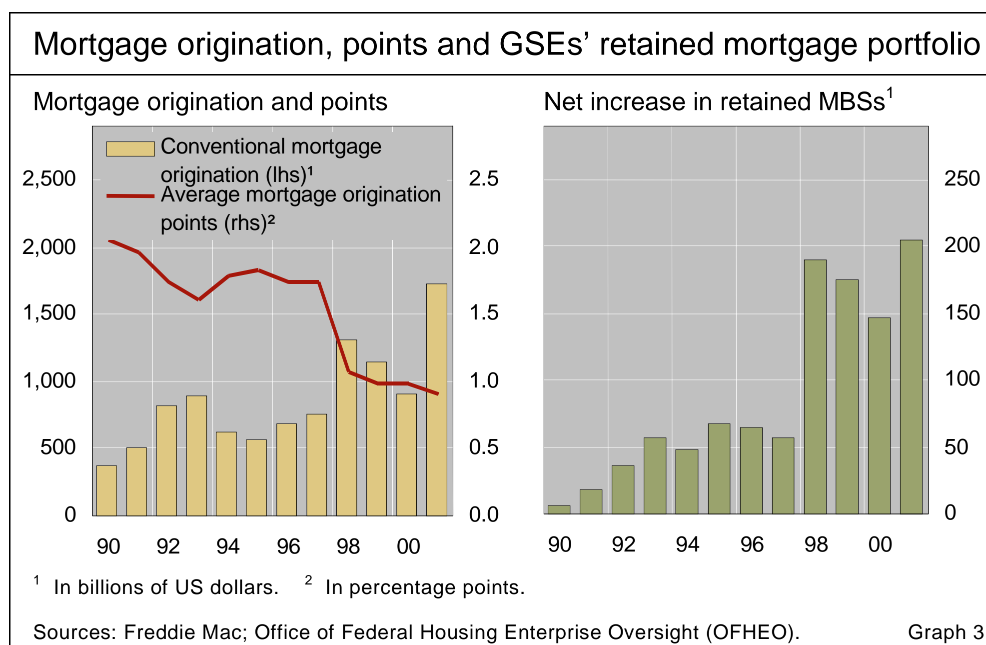
Mortgage rate and refinancing index



[1] January 1991 = 100. [2] In percentages.

Sources: Bloomberg; Freddie Mac. Graph 2

[8] Refinancing activity also depends on a number of other micro- and macroeconomic factors, including the volatility of mortgage rates, transaction costs of refinancing and credit quality of the borrower. See, for example, Bennett et al (2001).



Mortgage origination, points and GSEs' retained mortgage portfolio

[1] In billions of US dollars. [2] In percentage points.

Sources: Freddie Mac; Office of Federal Housing Enterprise Oversight (OFHEO). Graph 3

Graph 3). Average points paid on 30-year conforming mortgages currently stand at only 50 basis points. This is only about one third of the points charged five years ago.

Since the sharp drop in points in 1998, refinancing transactions have accounted for 43% of the total amount of mortgage origination, compared to 34% during the 1993–96 interest rate cycle. This suggests that the reduction in the cash payment threshold has increased the propensity of households to refinance irrespective of the actual mortgage rate.[9]

... and surging housing prices

A surge in housing prices created the additional wealth that households tapped through refinancing. The last two years have been unique as regards the pattern of housing prices. Every previous recession has been accompanied by at least a slowdown in housing price increases, and on two occasions housing prices actually declined. In contrast, house price increases accelerated during the economic slowdown that started in mid-2000. The OFHEO house price index surged 9.3% in 2000 and 6.0% in 2001. This is much more than the annual average increase of 4.6% over the last 20 years.

In addition to demographic trends that are a major long-term driving force behind housing prices,[10] favourable financing conditions may also have supported their rise. Housing affordability has improved due to lower mortgage rates and lower requirements for down payments, and home ownership has jumped from 64% to almost 68% in the last five years. Increasing demand for housing, accentuated by shortages in certain urban areas, results in upward pressure on prices.

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[9] An econometric estimate based on monthly data from January 1990 to March 2002 supports the significance of points for refinancing activity. When the refinancing index is regressed on points, changes in housing prices and changes in interest rates, points show the expected negative sign (lower points increase the refinancing index): a 50 basis point drop in points has an effect similar to a 1 percentage point drop in mortgage rates.

[10] See Joint Center for Housing Studies (2002).

Refinancing and changes in mortgage finance

Beyond cyclical factors, such as the weakening of the economy and the easing of monetary policy, the reasons for the reduction in refinancing costs lie partly with changes in the mortgage market and the behaviour of some of its key participants. These changes have meant that the financial system was able to absorb high mortgage origination and record high refinancing at broadly stable spreads of mortgages over treasuries.

Lower transaction costs of mortgage origination ...

The introduction of new technology seems to have contributed to the drop in points, thereby making the refinancing of mortgages easier. One prominent example is the computerised underwriting of mortgages eligible for refinancing by Fannie Mae and Freddie Mac.[11] Fannie Mae and Freddie Mac, while private institutions, are government-sponsored enterprises (GSEs) with the public mandate to promote house ownership. They are by far the largest players in residential mortgage markets.

Lower points are not exclusively the result of the behaviour of intermediaries since they also reflect the choice of borrowers among various alternatives for mortgage refinancing. However, the rather abrupt decline in points supports the argument of a supply side change affecting a large share of the market.

... and buy-and-hold by the GSEs seem to have facilitated refinancing

A strong expansion of the GSEs' retained mortgage portfolios seems to have played an important role in absorbing increasing mortgage origination and refinancing.[12] In the past, the GSEs had mainly "passed through" mortgages originated by banks to other investors through securitisation. Since 1998, the GSEs have also become the largest holders of such debt (Graph 3). The year 2001 marked a peak in the GSEs growth of retained mortgage portfolios, which increased by $207 billion. This is equivalent to 43% of household net borrowing in the form of home mortgages, a figure slightly below the average of 1998–2001 (47%), but much higher than earlier in the 1990s (27% in 1990–97).

Mortgage retention could have stabilised spreads through the unbundling of the duration and prepayment risk of mortgage portfolios. One element of such unbundling has been the issuance of GSE's own debt, and in particular of non-callable benchmark bonds. These instruments are attractive to a wider investor base compared with MBSs because of their high-credit rating, liquidity and the absence of prepayment risk. The other element has been the management and hedging of interest rate and prepayment risk through derivatives markets. Hence, in addition to "traditional" investors in MBSs, large

[11] According to Fannie Mae (1999), the introduction of a computer-based underwriting system enabled lenders to cut mortgage origination costs by over $800.

[12] The GSEs' retained mortgage portfolios could also have acted as a buffer between the primary mortgage market and the MBS market. This could have supported primary market activity if it prevented temporary increases in refinancing costs and eventually mortgage rates. A recent paper by Naranjo and Toevs (2002) finds that the GSEs' portfolio and securitisation activities stabilise mortgage markets by reducing the volatility of mortgage rates. Spreads of MBSs over treasuries declined in the first and the third quarter of 2001, when the GSEs were particularly active buyers of MBSs. This would be consistent with a buffer function of retained mortgage portfolios.

players in derivatives markets have become increasingly important for the hedging of prepayment risk.

One factor supporting the expansion of GSE's balance sheet and the associated unbundling has been the funding advantage resulting from the GSEs' agency status. The GSEs' long-term debt issues are rated triple-A by Moody's and Standard and Poor's compared with the double- or single-A quality of mortgage debt or the debt rating of major banks. In 2001, the stock of outstanding GSE debt increased by $259 billion or 24%.

A second, related, aspect was the changing shape of fixed income markets in the late 1990s.[13] Against the backdrop of a shrinking US Treasury market, the GSEs launched benchmark dollar debt issuance programmes in 1998 to exploit investors' appetite for highly rated and liquid securities. Such debt is now issued on a substantial scale, spanning maturities from two to 30 years and in accordance with a scheduled financing calendar. Benchmark issuance in euros was started in 2000 and now rivals that of some European sovereign issuers, both in size and liquidity.

Looking ahead

Refinancing again strong in 2002, but several factors point to a possible slowdown

Against the backdrop of a further decline in mortgage rates and continuously strong housing markets, refinancing has remained buoyant in the first half of this year. However, from the financial side, several factors point to a possible slowdown in refinancing activity and the cash-out of housing equity.

By mid-August, the interest rate for 30-year mortgages had reached a new record low of 6.22%. A further decline, which would further stimulate refinancing, would probably be accompanied by a deteriorating economic outlook. Under such a scenario, declining household confidence could at some point adversely affect the propensity to cash out and spend increases in housing wealth.

Moreover, the stock of mortgages suitable for refinancing has dwindled significantly as a consequence of the buoyant refinancing activity in the past two years. Currently, only 26% of 30-year mortgage-backed securities (MBSs) outstanding have a coupon above 7%, compared to 92% at the end of 1997 (Graph 4). Refinancing would thus offer substantial benefits in terms of much lower interest payments only for a much smaller share of borrowers than in the past.

The scope for more supply side changes in housing finance that could further increase the propensity to refinance through structurally lower costs appears limited. Transaction fees in the primary mortgage market have already declined dramatically. The conditions supporting a further expansion of GSE debt will very much depend on the supply of other high investment grade debt. In particular, the future supply of US Treasuries now seems to be significantly greater than was previously expected.

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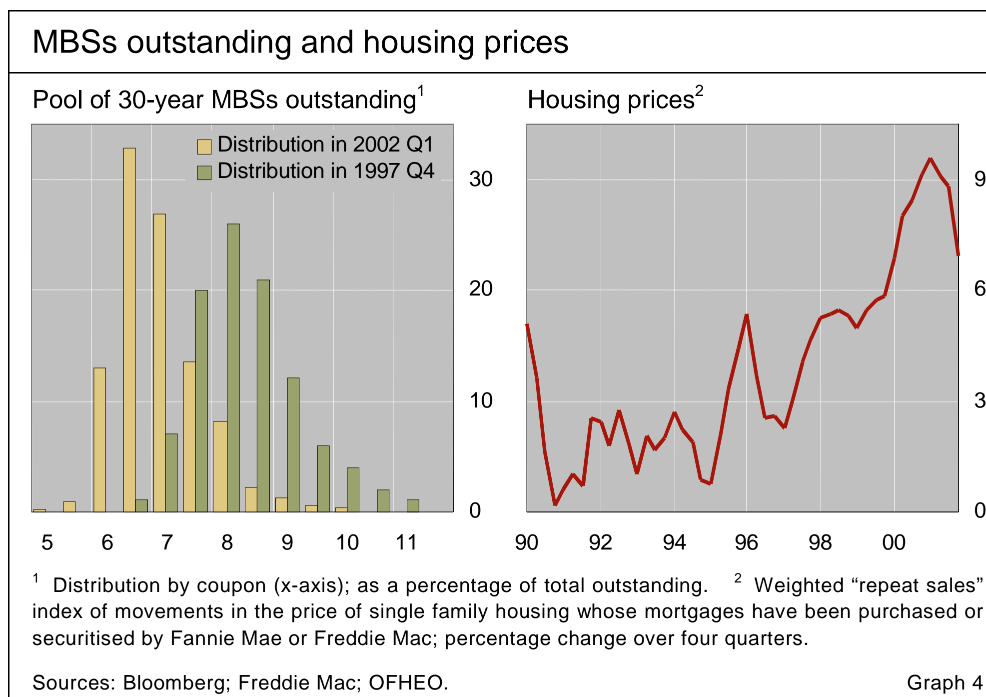
[13] On the changes in fixed income markets, see BIS (2001).



MBSs outstanding and housing prices

[1] Distribution by coupon (x-axis); as a percentage of total outstanding. [2] Weighted "repeat sales" index of movements in the price of single family housing whose mortgages have been purchased or securitised by Fannie Mae or Freddie Mac; percentage change over four quarters.

Sources: Bloomberg; Freddie Mac; OFHEO. Graph 4

In these circumstances, refinancing activity would largely depend on housing price developments. By the first quarter of 2002, the OFHEO house price index again had risen by 6.1% over the precedent four quarters. The mere absence of a further substantial increase in house prices would dampen refinancing activity and reduce the function of housing equity as a buffer for other wealth losses.

Conclusion

The US refinancing boom provides an example of how changes in financing patterns can have effects on macroeconomic performance. The coincidence of sharply increased refinancing activity since 1998 and innovations in mortgage markets is consistent with the view that supply side changes did affect the volume of refinancing. In turn, the "cash-out" of housing equity through mortgage refinancing appears to have supported household spending. At least in the United States in 2001, this seemingly had a significant countercyclical effect.[14]

From a longer-term perspective, the recent refinancing boom could herald a new world where housing equity is increasingly viewed as a source of liquidity and as a means to smooth fluctuations in income and wealth. This would not necessarily be limited to the use of traditional mortgages. Home equity loans (or second mortgages) and home equity lines of credit could complement the use of mortgage refinancing as means for managing home equity and debt.

[14] An example of procyclical effects was witnessed in the Netherlands in 2000. See Netherlands Bank (2002).

Such enhanced opportunities to manage household cash flow and eventually spending could – as in 2001 – help to reduce the cyclical volatility of the economy. In the future, however, greater scope for intertemporal smoothing of spending runs the risk of an overextension of household balance sheets, especially if higher housing prices are perceived as a source of continuing future returns. Such debt overextension could cause housing investment to turn into a financial burden rather than a buffer should house prices peak or fall, or interest rates rise. Against this backdrop, sustainable household debt levels and patterns in housing finance would be necessary preconditions for enhanced financial flexibility of households in the long run.

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