THE NEXUS OF CONSUMER CREDIT, HOUSEHOLD DEBT SERVICE AND CONSUMPTION

Consumer credit has recorded strong growth over the past decade attributable to both demand and supply side factors. In addition, the debt service burden has declined substantially over the past two years following successive interest rate cuts. Households with a mortgage are likely to benefit from an increase in expendable income. Despite such signs of easing liquidity constraints, private consumption remains subdued. Quantitative analysis is conducted to assess the relationship between consumer credit, household debt-service burden and consumption.

The empirical findings suggest that real income and net wealth, as captured by property prices, are major determinants of consumer spending. Changes in the real interest rate and the debt-service burden are also found to be significant and negatively associated with consumption in the short run. Credit conditions, proxied by the spread between lending and borrowing rates, also appear to play a significant role. Nevertheless, the quantity of consumer credit has little explanatory power for consumption in addition to that of income and property prices.

I. Introduction

Consumer lending in the form of credit card advances and other personal loans has increased in recent years. In addition, the substantial decline in interest rates since 2001 has reduced interest payments on mortgage loans, which account for the bulk of household debt service payments in Hong Kong. Experiences on many OECD economies suggest that these developments would provide a boost to household consumption, but this does not seem to be the case in Hong Kong.

This paper examines the relationship between consumer credit, the debt-service burden and consumer spending in Hong Kong. The structure of the paper is as follows. The next section outlines the conceptual framework and reviews the empirical literature on consumption. Section III gives an overview of the developments in consumer credit and debt service payments in Hong Kong, followed by an empirical analysis of how consumption may be related to the household debt-service burden, consumer credit, and other determinants in section IV. The last section offers conclusions.

II. Literature Review

A useful starting point for understanding the conceptual relationship between consumer spending and its determinants is the simple Keynesian consumption function, according to which consumption depends solely on disposable income in the current period. It, however, does not consider individuals' expected path of income or time preference for consumption, which would be captured by the real interest rate, representing the opportunity cost of spending.

The life-cycle and permanent income hypotheses consider consumer spending as a function of expected lifetime earnings, consisting of wage earnings and income from assets. To maximise utility, consumers aim to smooth consumption over time, despite varying incomes in different periods. The ability to do so hinges on consumers not facing credit constraints. In practice, consumers may not be able to borrow against expected future income; their ability to borrow may be constrained by their current income and their ability to post collateral. Consumption would then vary with current income and net worth, which is similar to the simple Keynesian function.

Credit availability may, nevertheless, feature in the short-run.

Recent studies on OECD countries (e.g. Antzoulatos, 1996 and Ludvigson, 1999) reveal that expansion in consumer credit is strongly associated with consumption growth. Furthermore, credit tightness, as proxied by the difference between banks' lending and borrowing rates, appears to be negatively related to the growth of consumption (Bacchetta and Gerlach, 1997). It is also found that financial liberalisation, particularly the deregulation of interest rates and the credit market, may reduce liquidity constraints faced by households, and in turn help support consumption (Boone, Girouard, and Wanner, 2001). These findings suggest that consumer credit plays a significant role in determining consumption, and the supply of credit is influenced by the monetary conditions as well as the competitive environment in which financial institutions operate.

Little evidence has been found that household debt-service burdens are negatively related to future consumption, although some theoretical models suggest that high debt-service burdens could make household consumption more sensitive to a drop in income or expected future income (Maki, 2000). There may also be an indirect causal relationship between debt service and consumption: a rise in the debt-service burden may cause a rise in loan defaults, leading to a tightening in credit availability, and in turn a negative impact on consumption (McCarthy, 1997).

Past studies on consumption in Hong Kong tend to focus on income and wealth effects (Dodsworth and Mihaljek, 1997; Peng, Cheung, Fan, and Leung, 2001). Research on the link of consumption with consumer credit and household debt-service burden is lacking. This paper aims to fill that gap.

III. Stylised Facts about Household Debt

In Hong Kong, household debt is mainly composed of residential mortgage loans and consumer credit. Statistics on these loans are gathered from all authorized institutions, which are the major lenders in Hong Kong. Data on loans offered by other entities are not available, but such loans are unlikely to be significant. Residential mortgage loans include all bank lending to finance purchases of private and public residential flats. For the purpose of this study, consumer credit is computed as the sum of credit card advances and lending to individuals for private purposes. It should be noted that some personal loans may be diverted to other purposes such as business use or property purchases, the extent of which is, however, difficult to gauge.

Household debt as a ratio to GDP rose rapidly to over 60% in 2001 from less than 30% ten years ago, but the ratio remained smaller than that in other industrialised economies (Table 1 and Chart 1). The rise was mainly accounted for by the rapid increase in residential mortgages in the period before the Asian financial crisis, alongside increased home ownership and higher property prices. Higher debt level, and the accompanying debt-service payments, could restrain consumer expenditure in times of economic downturn and an uncertain employment outlook.

Consumer Credit

Consumer credit has expanded rapidly since the latter part of the 1980s, mainly attributable to the expansion in credit card advances (Chart 2). This suggests that households' liquidity constraints may have become less binding over time. As such, consumer credit can be a potential explanatory variable for consumption during the study period. The following paragraphs examine consumer credit in greater detail, by analysing separately credit card advances and personal lending.

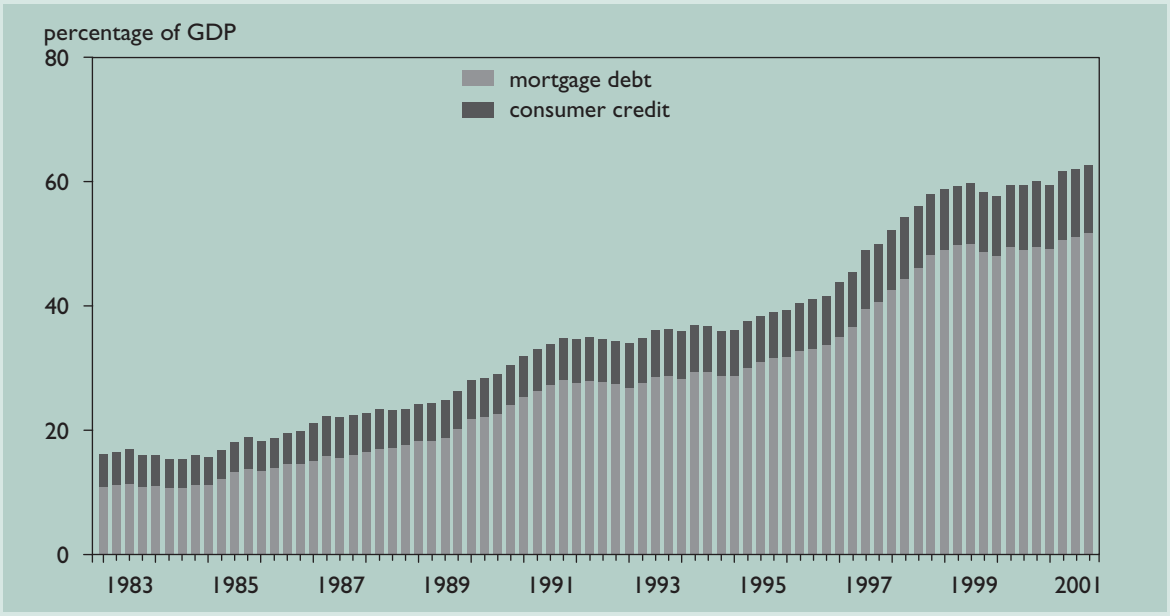
Table 1

Household Debt to GDP Ratio (as at end-2001)

	Hong Kong (%)	US (%)	UK (%)
Mortgage debt	51	53	56
Consumer credit	11	17	23
Total household debt	61	76	69

Chart 1

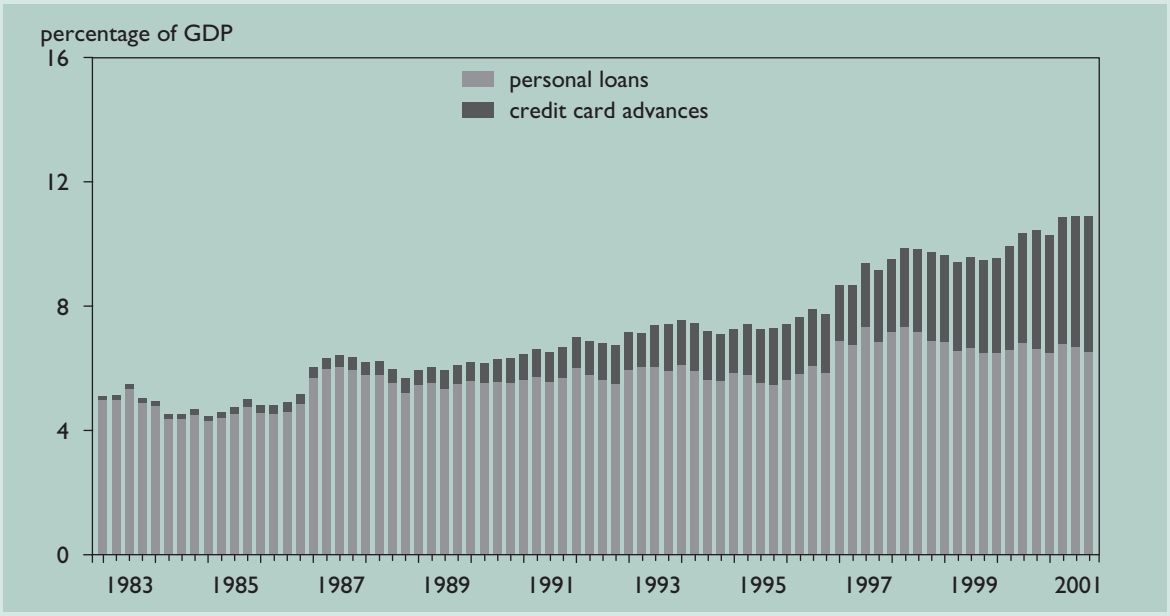
Ratio of Household Debt to Nominal GDP



Note:
Household debts include credit card advances, personal lending for private purposes, and all mortgage loans extended to private individuals for purchase of private residential properties, flats in Home Ownership Scheme, Private Sector Participation Scheme and Tenants Purchase Scheme.

Chart 2

Ratio of Consumer Credit to Nominal GDP



(a) Credit card advances

Credit card lending has been growing at double-digit rates for most of the past two decades, and often outpaced other types of domestic lending. Even in times of economic slowdown (for example, during the Asian financial crisis), it maintained fast growth, albeit at a moderated pace (Chart 3).

The rapid expansion of such advances likely reflects increased use of credit cards as a means of payment and as a financing vehicle. Usage has been widened to small-value purchases, internet-based transactions, fare payments for transport, and so on. As the labour market conditions worsen, credit card advances, which are more readily accessible, provide a means to tide over financial distress. This can be reflected in a relatively high rollover ratio (56% at end-June 2002).[1]

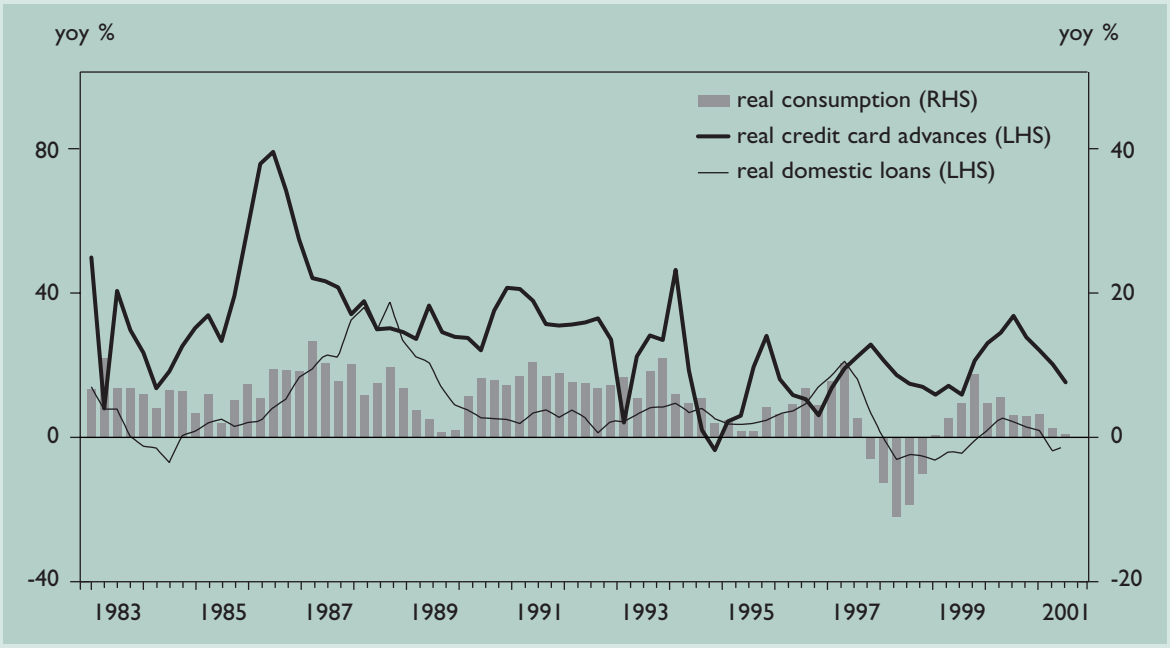
Supply side factors also contributed to the brisk growth of credit card advances. Given ample liquidity in the banking system and sluggish demand for commercial and property-related loans, banks have sought to expand beyond the traditional lines of business. This is reinforced by increased competition among banks, and interest rate deregulation. Banks have launched a range of promotion programmes for credit cards, such as distribution of gifts, discounts from shops and restaurants, and lower interest rates on newly transferred balances.

(b) Personal loans

Personal loans refer to lending to individuals for private purposes. While some banks have expanded in this segment in view of an increasingly competitive environment, growth of these loans remained broadly in line with that of overall

Chart 3

Credit Card Advances, Domestic Loans and Real Consumption (Change over a year ago)



Note:
Credit card advances and domestic loans are deflated by the consumer price index to obtain the figures in real terms. Real consumption refers to figures on private consumption expenditure compiled by the Census and Statistics Department.

1 The rollover ratio is the ratio of total rollover amount to total receivables. The rollover amount of a credit card account is the amount outstanding at the previous statement date less any amount paid between the previous statement date and the current statement date.

domestic credit in the 1990s. Unlike credit card advances, personal loans seemed to track private consumption closely (Chart 4).

Another source of consumer financing commonly available in OECD economies is housing equity withdrawal. In the case of Hong Kong, the drop in property values since 1997 by over 50% has constrained households' ability to refinance their mortgages (Chart 5). Furthermore, a notable number of households with mortgages have had the market value of their properties fall below the outstanding mortgage loans. A recent survey conducted by the HKMA indicates that the total number of bank customers whose loans in negative equity may be around 70,112, or 15% of total mortgage borrowers as at end-September 2002. The value of such loans amounted to around HK$118 billion, or 22% of the total outstanding stock of mortgage loans. In sum, consumption could be affected by property price developments via both the wealth effect and refinancing constraints.

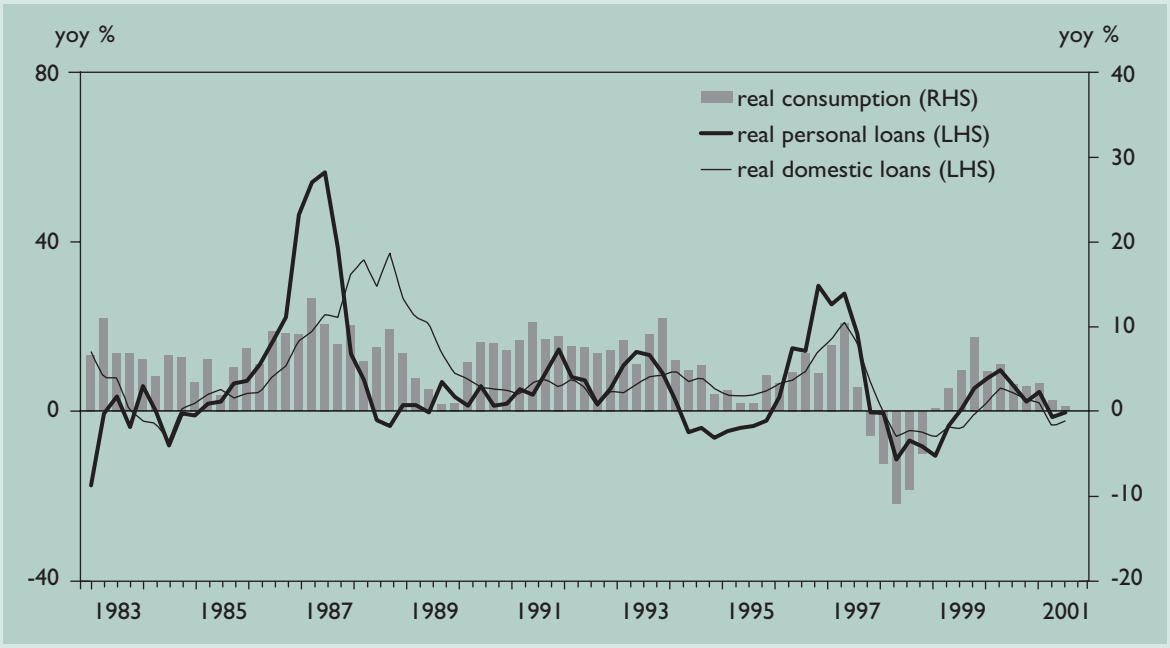
Debt-Service Burden

The household debt-service burden is defined as households' contractual debt service payments relative to personal disposable income. While the amount of debt impacts on households' balance-sheet positions, debt service influences cash flow and affects directly the expendable income (to the extent that individuals are subject to liquidity constraints). In addition, a heavy repayment burden may lead to a higher default rate of loans to households and tightened bank lending policies, and in turn, tighter liquidity constraints on households.

The debt-service burden depends on the level of interest rates, the amount of household debt and income. As residential mortgage borrowing accounts for over 80% of bank lending to households, mortgage repayments are likely to constitute the bulk of household debt-service burden. Mortgage rates declined along with the reduction of the Best Lending Rate (BLR) by a

Chart 4

Personal Lending, Domestic Loans and Real Consumption (Change over a year ago)

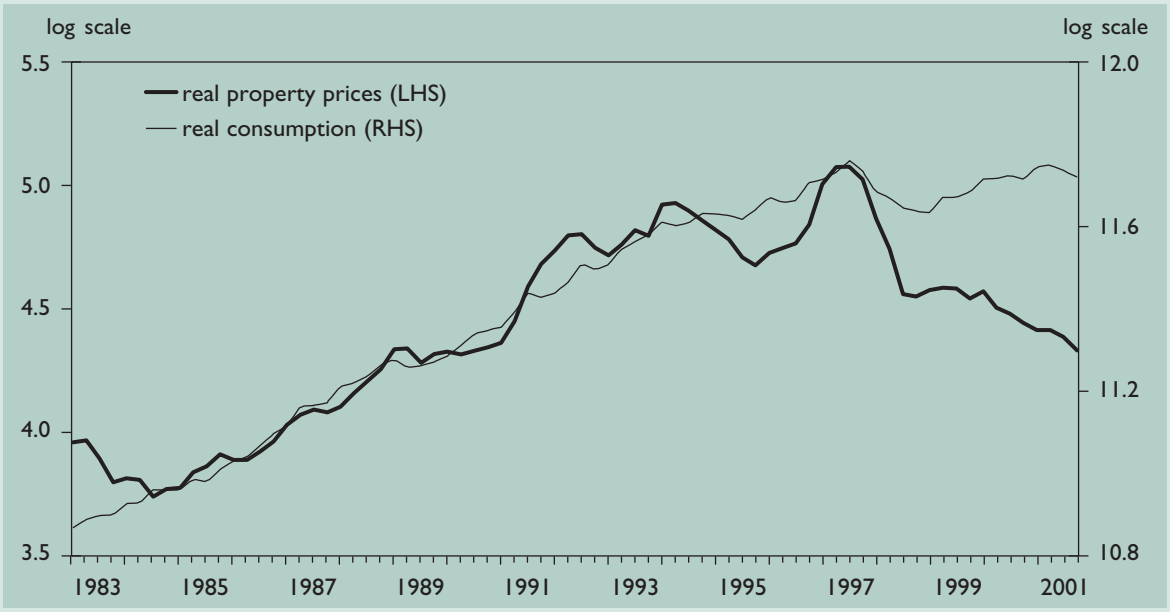


Note:
Personal lending refers to the outstanding amount of loans and advances extended to individual for private purposes.

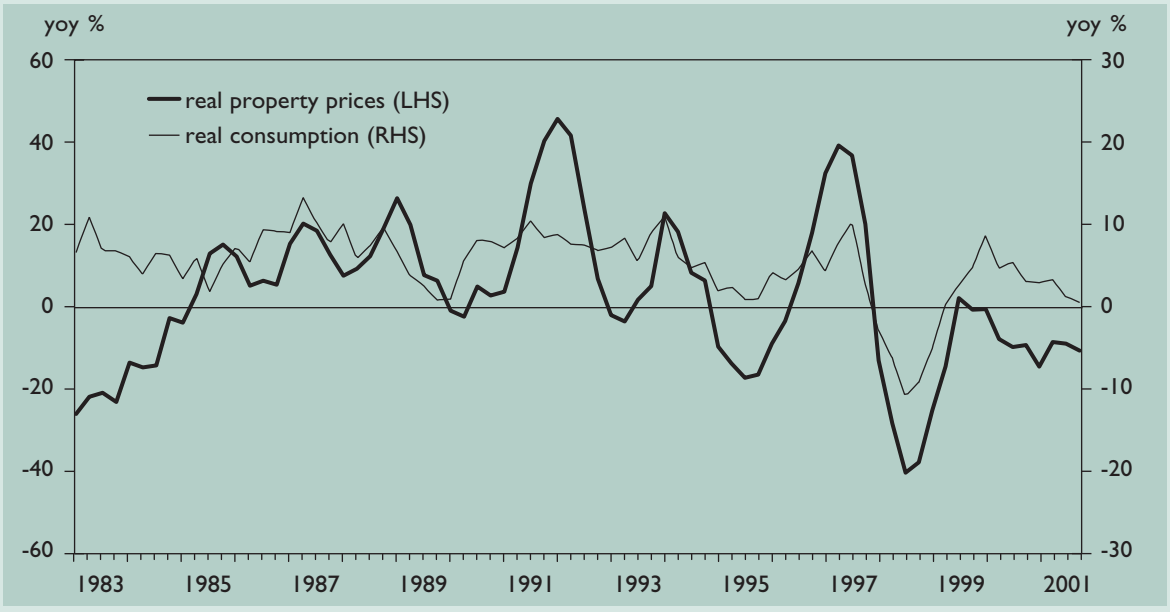
Chart 5

Real Property Prices and Real Consumption

Levels



Growth



Note:

Real property prices are measured by deflating the property price index for private residential housing by the consumer price index.

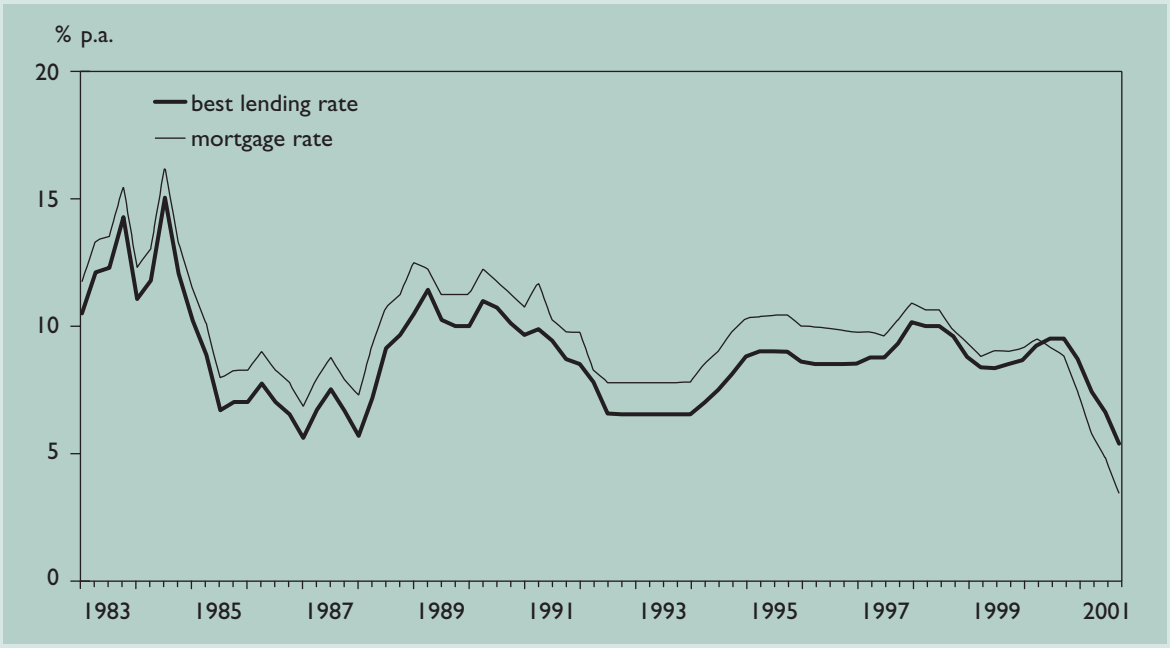
total of 437.5 basis points in 2001. Intensified competition between banks has also led mortgage rates to fall below the BLR (Chart 6). Income, as proxied by nominal GDP or GNP, has been flat lately.[2] The decline in the effective rate of salary tax in recent years following the Government's increase of various exemptions and allowances also had a positive effect on disposable income. These factors together should have led to a lower household debt-service burden.

To gauge the debt-service burden of households, the ratio of aggregate mortgage debt service to GDP is estimated. Monthly mortgage repayments are approximated by amortising the outstanding stock of mortgage loans extended by banks, based on an estimated average interest rate and assuming a constant maturity. These estimates can provide indications on the evolution of the debt-service burden. Chart 7 shows that the mortgage debt-service burden has declined since 2000 to a level comparable to that in 1997.[3]

The effect of a decline in debt service payments on aggregate private consumption may be related to the distribution of the debt-service burden within the population. The Population Census 2001 found that only a quarter of total households in Hong Kong had outstanding mortgages.[4] Among those with mortgage

Chart 6

Interest Rates



Notes:

1) Best lending rates refer to period average.

2) Mortgage rate refers to an estimated average mortgage rate extended on new loans for each period.

2 Statistics on personal disposable income are not available in Hong Kong. Nominal GDP is used as a proxy. While GNP data, which include income from abroad, may be a better indicator, annual data are only available from 1993 and quarterly data from 1999. Broadly speaking, GNP displayed a similar trend as GDP.

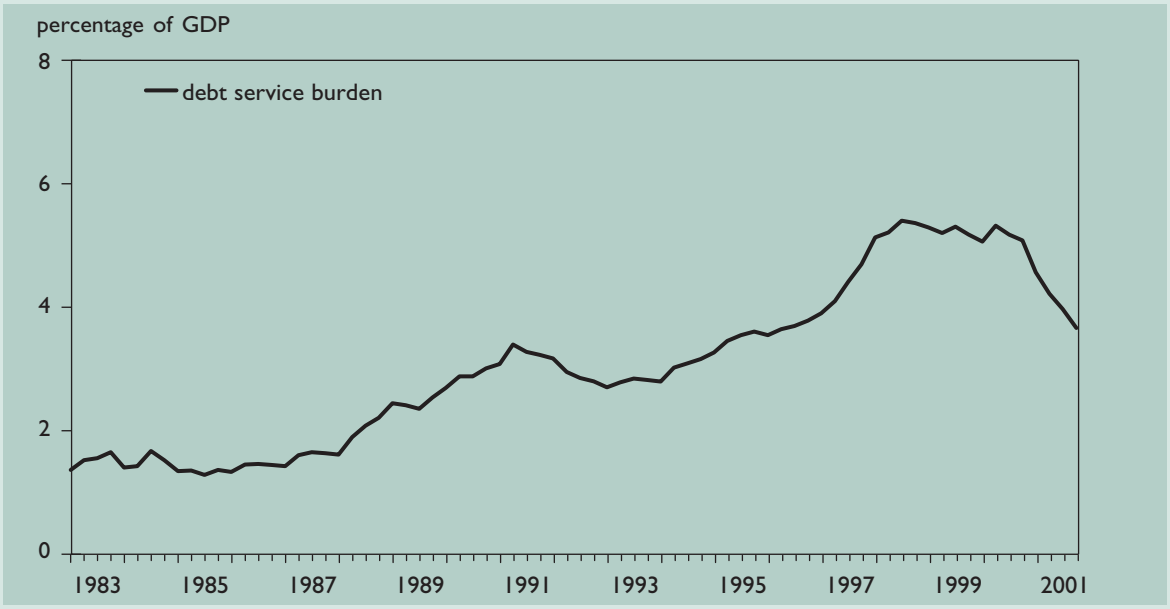
3 An alternative indicator based on the ratio of average mortgage repayments (per loan) to median household income is also compiled, and shows similar declines over the past two years. The figure stayed at around 30% in 2001, comparable to the estimate from the Population Census 2001.

4 According to the Population Census 2001, about half of the total number of households in Hong Kong lived in owner-occupied accommodations. Within these households, half of them lived in accommodations with outstanding mortgages.

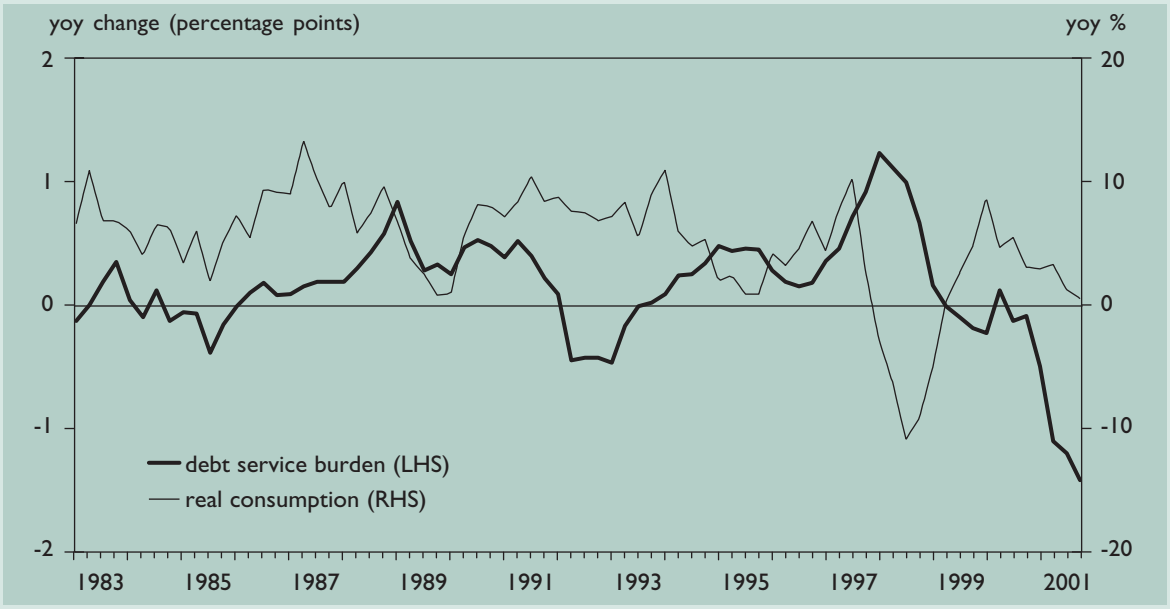
Chart 7

Debt Service Burden and Real Consumption

A. Debt-Service Burden



B. Change in Debt-Service Burden and Consumption Growth



Note:
The debt-service burden is estimated by the HKMA.

borrowings, the median monthly mortgage repayment to income ratio was around 30%.

From a broader perspective, whether a reduction in debt servicing may translate into higher consumption depends on consumers' choices between consumption, savings or debt repayment. This is, in turn, subject to consumers' perception of economic prospects. Alongside rising unemployment, continued weakness in the property market, and an uncertain economic outlook, consumer confidence has been on the decline since early 2000, according to a regular survey of economic confidence in Hong Kong.[5]

IV. Empirical Analysis

This section examines the determinants of consumer spending, with particular focus on the significance of consumer credit and debt-service burden. An error-correction model (ECM), first proposed by Davidson, Hendry, Srba, and Yeo (1978) in their study of consumer expenditures and income in the United Kingdom, is employed. The error correction model allows the capturing of both long-run relationship and short-run dynamics.

Consumption is postulated as an increasing function of income and net worth. Financial variables, including personal lending, credit card advances, and the debt-service burden, are added to capture the severity of liquidity constraints. The expected signs of coefficients for credit aggregates are positive and that for the debt-service burden is negative. In addition, the wedge between interest rates applied to lenders and to borrowers is considered. An increase in the wedge is likely to be associated with tightened credit conditions, and therefore may have a negative relationship with consumption. The unemployment rate is included as a proxy for the uncertainty over future income prospects, an increase of which is likely to restrain spending. The real interest rate represents the opportunity cost of consumption, a rise in which may impact negatively on consumer spending.[6] The specification is expressed as follows:

$$\Delta c_t = \alpha + \boldsymbol{A(L)}\begin{bmatrix}\Delta c_{t-i}\\ \Delta y_t\\ \Delta w_t\end{bmatrix} + \boldsymbol{B(L)}\begin{bmatrix}\Delta x_t\\ \Delta u_t\\ \Delta r_t\end{bmatrix} + \lambda(c_{t-1} - \beta_1 y_{t-1} - \beta_2 w_{t-1}) + \varepsilon_t$$

where c and y denote real private consumption expenditure and real disposable income (captured by real GDP) respectively, w_t net worth (captured by real property prices), x_t a vector of financial variables which includes credit aggregates, the debt-service burden, and the spread between lending and deposit rates, r_t the real interest rate and u_t the unemployment rate. All lower case letters represent logarithmic values except for interest rates, the unemployment rate, and the debt-service burden. L denotes the lag operator, with $\boldsymbol{A(L)}$ and $\boldsymbol{B(L)}$ the vector of coefficients capturing the short-run dynamics. The expression within the bracket is an error correction term, where the coefficient, λ, is expected to be negative, representing an adjustment towards the long-run equilibrium value.

Empirical Findings

The estimation uses data from the first quarter of 1982 to the fourth quarter of 2001. The results are summarised in Table 2 below while the details as well as descriptions of data sources are provided in the Appendix.[7] All parameters have the expected signs. The diagnostics do not reveal irregularities in the residuals.

In the long run relationship, consumption varies proportionately with income and property

5 The Hong Kong Policy Research Institution Limited compiles the Economic Confidence Indices from telephone surveys on a regular basis.

6 The effect of expected price change enters implicitly through real interest rate, which is calculated as the difference between the nominal interest rate and the inflation rate. While the inflation rate alone is also a measure of the opportunity cost of consumption, econometric test results do not suggest that it is significant at 5% level in the case of Hong Kong.

7 The estimation follows a general-to-specific procedure, starting with four lags of each variable. The variables all satisfy the usual required properties of being first difference stationary according to the Augmented Dickey-Fuller test. The Johansen technique suggests there is one co-integrating relationship between the long-run variables.

Table 2
Summary of Estimation Results

	(Semi-)Elasticities of real consumption with respect to the explanatory variable
Long run[(1)]	
Real GDP	0.83 – 0.86
Real property prices	0.14 – 0.17
Short run	
Real GDP (% change over a quarter)	0.22 – 0.43
Real property prices (% change over a quarter)	0.15 – 0.17
Unemployment rate (change over a quarter)	-0.77 – -1.32
Mortgage debt-service burden (lagged four-quarter change)	-1.17
Real interest rate (lagged change over a quarter)	-0.37
Spread between lending and deposit rates (lagged four-quarter change)	-0.66
Credit card advances and personal lending (% change over a quarter)	Not statistically significant

Note: (1) The preliminary results indicate that the coefficients for real GDP and real property prices add to unity in the long-run equilibrium relationship and the estimation is proceeded on this basis.

prices. Specifically, a one percent increase in income would lead to around 0.85% increase in consumption. The result is comparable to those for OECD economies.[8] The corresponding estimates with respect to real house prices is about 0.15%. As compared to the figures for OECD economies which range widely from 0.04% to 0.17%, the estimate for Hong Kong was towards the upper end. This likely reflects the relatively large share of housing assets in the net wealth. The Marginal Propensity to Consume (MPC) for net housing wealth is estimated to be around 0.07.[9] In other words, a one-dollar decline in housing wealth would lead to seven-cent decrease in consumer spending, as compared to four- to nine-cent decrease in OECD economies.[10]

The coefficient of the error-correction term is negative and statistically significant, indicating presence of adjustment lags in consumer spending. The estimates suggest that about a quarter to a third of the deviation from the long-run equilibrium level of consumption is offset in the next period.

In the short-run, changes in income and property prices are statistically significant in explaining growth in consumer spending across all specifications. In particular, the short-run elasticity of consumption with respect to property prices is fairly stable at around 0.16 and strongly significant. This may be associated with the fact that movements in house prices can heavily influence consumer confidence and the availability of

8 See Bertaut (2002) and Case, Quigley, and Shiller (2001) for estimates of elasticities in OECD economies. Also, note that in the absence of information on personal disposable income, the marginal propensity to consume (mpc) out of income cannot be computed.

9 The elasticity of consumption (c) with respect to housing wealth (hw) is defined as $\frac{\partial c}{c} / \frac{\partial hw}{hw}$. The MPC for housing wealth ($\frac{\partial c}{\partial hw}$) can be derived by multiplying the elasticity by $\frac{c}{hw}$. The ratio of private consumption expenditure (in annual terms) to the estimated value of net housing assets is around 0.44 (based on 2000-2001 figures). Assuming the long run elasticity of consumption with respect to net housing wealth is the same as that to housing price, the MPC is estimated to be around 0.07.

10 See Bertaut (2002), and Mehra (2001).

mortgage refinancing. As for income growth, the estimated coefficient declines if financial variables are added to the equation (see details in the Appendix). This may suggest that after taking into account credit availability, consumer spending becomes less sensitive to income changes in the short run.[11]

Changes in the unemployment rate, as a proxy for uncertainty regarding future income, exhibit a negative relationship with consumption. However, the level of statistical significance is low.[12]

The lagged change over four quarters in the debt-service burden is significant in predicting consumption in the short-run, and raises the explanatory power of the equation considerably as evidenced by the fact that the adjusted R^2 rises to 0.58. Debt service payments may directly affect mortgagee households' income available for spending and thus their consumption.

The availability of consumer credit, as captured by credit card advances and personal lending, is not statistically significant. To further examine the relationship between consumer credit and consumer spending, growth in income and property prices are dropped from the short-run specification while the credit aggregates are retained. Personal lending shows, in this case, a significant and positive relationship with consumer spending. Credit card advances, however, remain insignificant. This may be because only part of the credit card receivables are used to finance spending (i.e. those balances on which interest is paid). If the share of such advances in the total receivables varies over time, the total may not capture the significance of credit card financing.

The change over four quarters in the lagged spread between lending and borrowing rates, which proxies the tightness of credit conditions, is significant and negatively associated with consumer spending. This is notwithstanding the fact that it may measure poorly the premium charged. The real interest rate is significant as well. These results may appear at odds with the lack of explanatory power of credit aggregates. However, it should be noted that the tightness of credit conditions affects a broader spectrum of lending, including mortgage refinancing and consumer credit. Housing equity withdrawal can have considerable influence on consumer spending, as indicated by the experience of industrialised economies.

V. Conclusion

Consumer credit, in the form of credit card advances and personal lending, has expanded rapidly in the past two decades. The easing of liquidity constraints should help smooth consumption, reducing its sensitivity to income changes over the short run. Empirical analysis finds that a broad measure of a shift in the tightness of credit conditions - the spread between lending and borrowing rates - is significant in explaining consumption in the short run. However, the quantity of consumer credit bears little explanatory power in addition to that provided by income and property prices.

The debt-service burden has declined substantially following the successive interest rate cuts since the beginning of 2001. This is likely to benefit households with mortgages, who account for about a quarter of the total number of households. The estimation results indicate that changes in the debt-service burden are significant in explaining consumer spending.

Changes in income and property prices remain the primary determinants of consumption. Slow economic activity and a sluggish property market, coupled with uncertainty over employment prospects, are likely to weigh on consumer spending in the near term.

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11 The results should be interpreted with caution since the confidence bands do not suggest significant differences in the coefficients across regressions.

12 Aware of potential simultaneity bias, re-estimation using instrumental variables (up to 4 lags of first differences of income (log), property price (log), and the unemployment rate) is conducted. It yields similar point estimates but does not find the unemployment rate statistically significant.

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MODEL ESTIMATION FOR CONSUMPTION

The estimation is based on quarterly data spanning from the first quarter of 1982 to the fourth quarter of 2001. They are all de-seasonalised. Data on real private consumption are obtained from national account statistics compiled by the Census and Statistics Department. Real GDP is taken as a proxy for personal disposable income. In the absence of information on households' balance sheets, the price index of private residential housing, deflated by CPI, is used to capture households' net worth.[13] The real interest rate is computed as the difference between the average effective deposit rate and the inflation rate as measured by the percentage change of the consumer price index (CPI) over a year.[14] Real credit card advances and personal lending are obtained by deflating the nominal data by the CPI. The unemployment rate refers to the seasonally adjusted series available from the Census and Statistics Department. The debt-service burden is taken as the ratio of aggregate debt service payments to GDP. The wedge between lending and borrowing rates is computed by subtracting the average deposit rate (weighted by the amount of deposits in each category) from the Best Lending Rate. In the absence of information on the rates charged on credit card and other personal lending, the Best Lending Rate is used as a proxy.[15] The wedge is likely to suffer from measurement errors. In particular, the spread narrowed during the Asian financial crisis and failed to reflect the tightened credit conditions.

The estimates indicate that the parameters of real GDP and housing prices sum to unity in the long-run relationship and statistical testing cannot reject the hypothesis. Estimation is proceeded by imposing this restriction. The results are provided in the following table. Column (1) shows the basic specification in which only first-order differences of the variables in the cointegrating relationship and their lags are considered, and column (2) the results upon considering change in the unemployment rate and its lags as explanatory variables. The remaining columns list the estimated equations after considering the debt-service burden (*dsb*), the spread between the Best Lending Rate and the average deposit rate (*spr*), and the real interest rate (*r*).[16] Growth of credit card and personal lending (or their sum) are not significant and therefore are not shown here. The equations appear well specified. All variables have the expected signs. The diagnostic tests do not reveal any irregularities in the residuals. Recursive estimates of the coefficients in each equation are broadly stable.

13 The majority of household wealth is held in the form of property and equities. However, the value of equities held by households is likely dwarfed by wealth held in property assets. Based on a survey conducted by the Securities and Futures Commission in 1999, it is estimated that about HK$100 billion worth of equities was held by retail investors, which is less than the estimated value of total net housing worth of HK$1,270 billion. Also, the preliminary estimation result indicates that the Hang Seng Index is not statistically significant. It is therefore excluded from the empirical analysis.

14 An alternative measure is the long-term real interest rate (see "Real Interest Rates in Hong Kong", *HKMA Quarterly Bulletin*, August 1999, for details of derivation), but the test statistics suggest that it is not significant at 5% level.

15 In respect of the lending-borrowing spread, data during the Asian financial crisis (Q4/97-Q3/98) are excluded from the regression since the narrowed spreads during that time were not indicative of the credit conditions.

16 In respect of the lending-borrowing spread, data during the Asian financial crisis (Q4/97-Q3/98) are excluded from the regression since the narrowed spreads during that time were not indicative of the credit conditions.

Estimation Results (1982:1-2001:4)

$$\Delta c_t = \alpha + \boldsymbol{A(L)}\begin{bmatrix}\Delta c_{t-i}\\ \Delta y_t\\ \Delta w_t\end{bmatrix} + \boldsymbol{B(L)}\begin{bmatrix}\Delta x_t\\ \Delta u_t\\ \Delta r_t\end{bmatrix} + \lambda\left((c_{t-1} - y_{t-1}) - \beta\,(w_{t-1} - y_{t-1})\right) + \varepsilon_t$$

	(1)	(2)	(3)	(4)	(5)
Constant (α)	*0.35*** (0.11)	*0.36*** (0.11)	*0.47*** (0.13)	*0.38*** (0.12)	*0.35*** (0.12)
Error-correction Term (λ)	*-0.31*** (0.07)	*-0.28*** (0.07)	*-0.30*** (0.07)	*-0.26*** (0.07)	*-0.30*** (0.07)
$w_{t-1} - y_{t-1}$ (β)	*0.14*** (0.03)	*0.15*** (0.03)	*0.17*** (0.03)	*0.16*** (0.03)	*0.14*** (0.02)
Δc_{t-1}	*-0.20*** (0.09)	*-0.21*** (0.09)	*-0.23*** (0.09)	*-0.24*** (0.09)	*-0.18*** (0.09)
Δc_{t-2}	*-0.21*** (0.09)	*-0.21*** (0.08)	*-0.29*** (0.08)	*-0.20*** (0.08)	*-0.23*** (0.08)
Δy_t	*0.43*** (0.09)	*0.35*** (0.11)	*0.26*** (0.10)	*0.29*** (0.10)	*0.22*** (0.10)
Δw_t	*0.17*** (0.03)	*0.15*** (0.03)	*0.16*** (0.03)	*0.15*** (0.03)	*0.15*** (0.03)
Δu_t		*-0.77*(1) (0.48)	*-1.14*** (0.44)	*-1.08*** (0.47)	*-1.32**** (0.45)
$\Delta_4 dsb_{t-1}$			*-1.17**** (0.41)		
Δr_{t-2}				*-0.37*** (0.17)	
$\Delta_4 spr_{t-1}$(2)					*-0.66*** (0.28)
Adjusted R^2	0.47	0.52	0.58	0.50	0.56
SE of regression	0.0146	0.0144	0.0127	0.0138	0.0129
Normality (Jarque-Bera statistic)	1.05 [0.59]	0.75 [0.69]	0.62 [0.73]	1.02 [0.60]	0.42 [0.81]
Serial correlation LM(4)	0.43 [0.79]	0.21 [0.93]	0.25 [0.91]	0.48 [0.75]	0.43 [0.79]
White heteroskedasticity	1.29 [0.24]	1.44 [0.15]	0.79 [0.72]	1.56 [0.09]	0.58 [0.92]

Notes:

Figures in ( ) are standard errors and those in [ ] are p-values.

****, **, * denote statistical significance at 1%, 5% and 10% level respectively.*

(1) p-value=0.11

(2) Data on the lending-borrowing spreads during the period of Asian financial crisis are excluded. The spreads narrowed at that time and were not indicative of banks' credit stance.