

Demand for cash around Chinese New Year

by Joanna YL Shi of the Research Department

The Chinese New Year exerts a major moving holiday effect on many economic variables in Hong Kong. Consumption activity typically surges before the holidays, scales down during the holidays, and gradually returns to normal levels afterwards. The demand for cash is influenced by the rise in consumption around the festival and the tradition of giving “red packets”. Over the years, the increase in cash holdings ahead of the holidays has been largely stable, ranging from HK\$19-23 billion. However, the percentage increase in cash has declined in recent years, attributable to a larger base arising partly from the rapid expansion in cash holdings alongside low interest rates, and increased external demand for the Hong Kong dollar currency.

I. INTRODUCTION

The demand for Hong Kong dollar currency notes is significantly affected by the Chinese New Year (CNY) holidays. Data on currency notes held by the public and the banking sector suggests that there is a recognisable pattern of cash holdings prior to and after the CNY.¹ The pattern largely reflects the gradual increase in demand for cash ahead of, and around, the festival. As cash in circulation constitutes over 40% of the Monetary Base, it is useful to monitor and estimate the pattern of the change in cash demand around the CNY, and consider if the pattern differs across years.²

This article examines the impact of CNY on the demand for Hong Kong dollar currency notes and estimates the seasonal pattern. The rest of the article is organised as follows. Section II discusses the implications of moving holidays, especially the CNY, on economic activity and seasonal adjustment

of a time series. Cash in circulation is affected notably by the holidays, with cash holdings exhibiting an inverted V-shaped pattern around the festival. Section III provides some stylised facts of the moving holiday effects on the demand for cash. It is found that the rise in cash ahead of the holidays has been relatively stable in value terms across years. Section IV presents some estimates of the seasonal pattern, and the final section deals with the conclusions.

II. MOVING HOLIDAY EFFECTS

Many economic variables are affected appreciably by holidays. Moving holidays, referring to those with dates changing from year to year, can complicate the interpretation of economic statistics. In particular, a moving holiday can affect the pattern of activity in two or more months, while the precise impact depends on the date of the holidays. Such “moving holiday effects” cannot be removed by standard seasonal adjustment methods.³

¹ Currency notes refer to the outstanding amount of Certificates of Indebtedness (CIs) and \$10 notes issued by the Government. When the three note-issuing banks issue banknotes, they are required to submit US dollars (at HK\$7.80=US\$1) to the HKMA for the account of the Exchange Fund in return for CIs (which are required by law as backing for the banknotes issued). For the purpose of this study, currency notes and cash are interchangeable.

² The Monetary Base in Hong Kong comprises the outstanding amount of CIs, currency notes and coins issued by the Government, the balance of clearing accounts held by banks with the HKMA, and the Exchange Fund Bills and Notes.

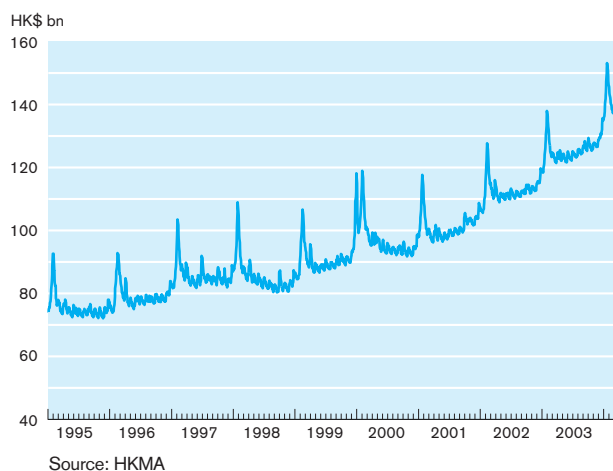
³ The effects of public holidays, if falling on the same days every year, will form part of the seasonal factors.

In Hong Kong, the CNY exerts a major moving holiday effect since the date changes every year in terms of the western calendar: it falls in January in some years and in February in others.^{4&5} Consumption activity typically surges before the holidays, scales down during the holidays before gradually returning to normal levels. The transaction demand for money is influenced by the pattern of economic activity around the CNY. In particular, cash in circulation registers the strongest variation, owing to the change in consumption patterns and the tradition of giving “red-packets”. The impact on broad money is nevertheless insignificant. The movements of cash demand related to this festival in Hong Kong are examined in greater detail below.

III. STYLISTED FACTS

Chart 1 depicts the outstanding amount of cash in circulation over the past 10 years. Chart 2 shows the movements in terms of 30 working days before and after the CNY holidays for each year. Both charts indicate clearly the presence of seasonality in the data. Several aspects of these charts are worth noting.

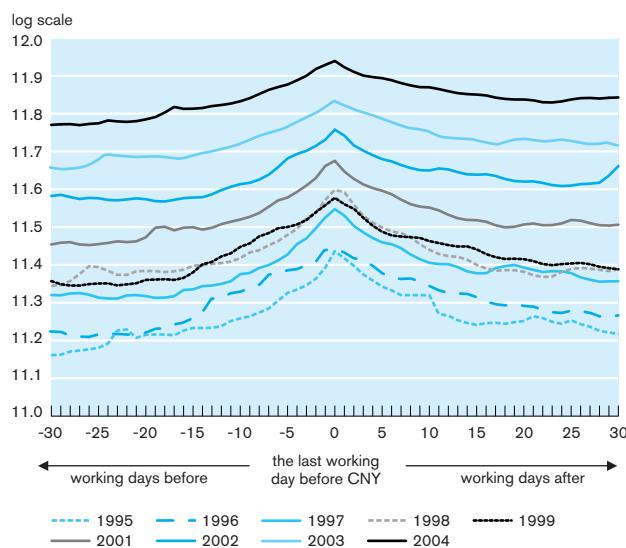
CHART 1
Outstanding amount of cash in circulation (daily figures)



First, during the past 10 years, the plots show that cash in circulation generally followed an inverted “V-shaped” pattern around the CNY except in 2000, when the outstanding amount was distorted by the transition to Y2K.⁶ In most of the other years, the demand for cash started to increase on the 25th working day ahead of the festival, before peaking on the last working day prior to the holidays, and then declined at about the same pace afterwards. The recurring patterns are attributable to the fact that the public tends to hold a greater amount of cash ahead of and during the holidays, due to a higher number of retail transactions, and the tradition of giving gifts and “red packets”.

Secondly, the increase in cash holdings ahead of the CNY and the subsequent reduction after the holidays were similar in magnitude across years. Specifically, between 1995 and 2004, cash in circulation rose by HK\$19-23 billion in the 25 working days prior to the last working day ahead of the CNY (except in 2000)

CHART 2
Cash in circulation around CNY



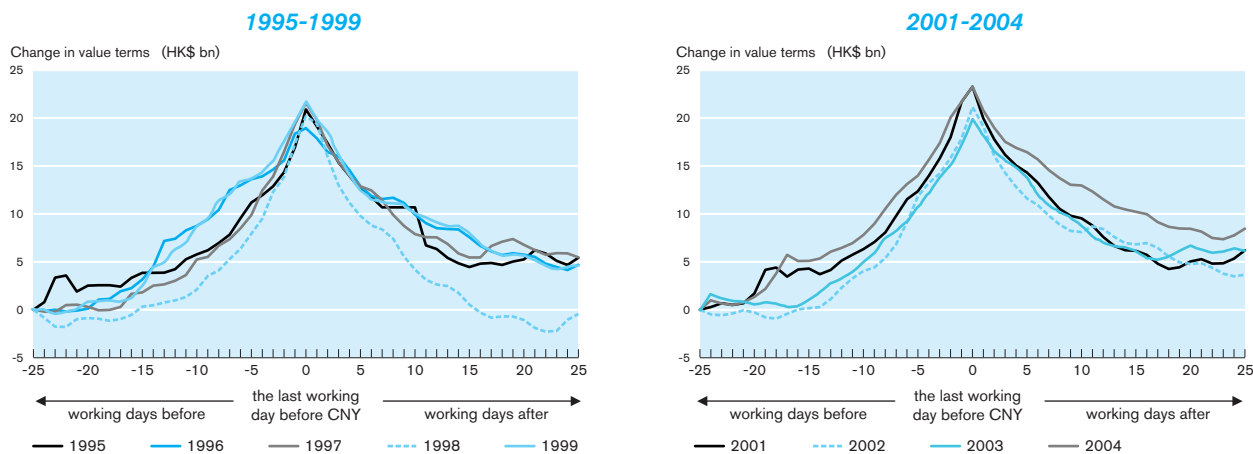
⁴ The Dragon-boat Festival and the Mid-autumn Holiday are two other important lunar holidays with dates moving between May-June and September-October respectively. Nevertheless, their impact on economic activity is less significant than that of the Chinese New Year.

⁵ The western calendar is the official calendar in most countries with the year beginning on 1 January and ending on 31 December. The Chinese calendar is based on the (lunar) cycles of the moon with the start of each year varying between the dates of 21 January and 19 February.

⁶ Cash in circulation in early 2000 was affected by a one-off rise in banks’ cash holdings (since late 1999) to prepare for a possible surge in the public demand for cash in the transition to 2000.

CHART 3

Change in cash in circulation around CNY



Note: The change in value terms is calculated by taking data on the 25th working day before the last working day ahead of the CNY holidays as the base. Cash in circulation in 2000 was affected by the Y2K effect and thus was excluded.

Source: HKMA

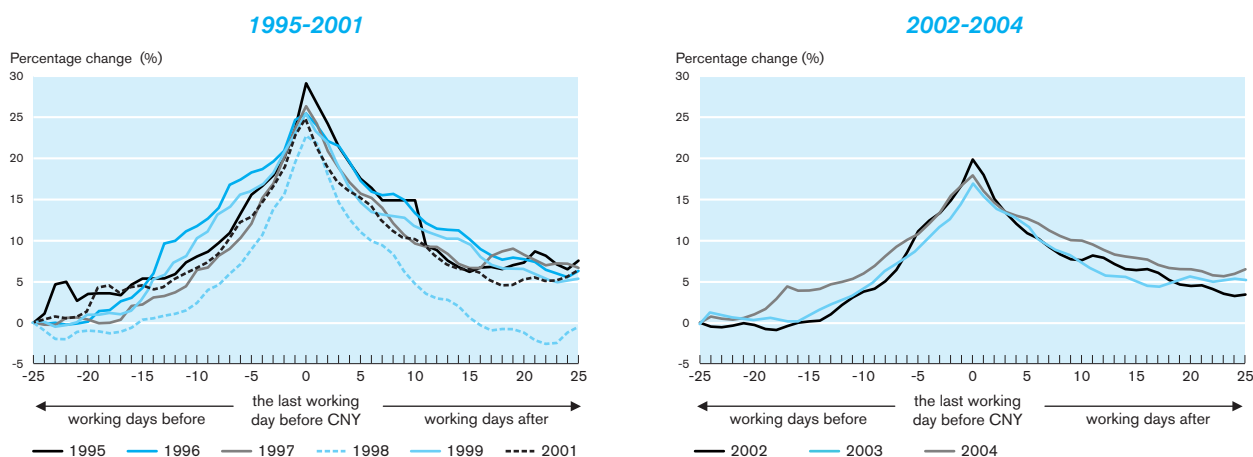
(Chart 3). The rise did not seem to be affected by the prevailing economic conditions. For example, the increase in cash holdings in 2004, when the economy was expanding, was similar to that in 1998-99 when the economy was in recession. Some 75% of the increase was gradually reduced after the holidays, as activities returned to normal levels.

Thirdly, despite the stable pattern in terms of value, the percentage change in cash around the CNY varied across years.⁷ Cash grew by a range of

23-29% ahead of the holidays over the period 1995 to 2001, but the growth rate decreased to 17-20% in the past few years (Chart 4). One plausible explanation is the rapid expansion in cash in circulation in recent years, due to low interest rates, and the increased demand for Hong Kong dollar currency notes outside Hong Kong, particularly in the southern part of China.⁸ Therefore, the seasonal pattern is believed to be better reflected in the changes in value terms, rather than percentage terms.

CHART 4

Percentage change in cash in circulation around CNY



Notes: The percentage change is calculated by taking data on the 25th working day before the last working day prior to the holidays as the base. Cash in circulation in 2000 was affected by the Y2K effect and thus was excluded.

Source: HKMA

⁷ The percentage change in cash is calculated using the data on the 25th working day before the last working day prior to the CNY holidays as the base.

⁸ The expansion of external demand for Hong Kong dollar currency reflects a combination of factors, including

socio-economic integration between Hong Kong and the Mainland, the non-convertibility of the renminbi, the relatively large denominations of the Hong Kong dollar, and some relaxation of the foreign exchange transaction rules by Mainland authorities (HKMA, 2002).

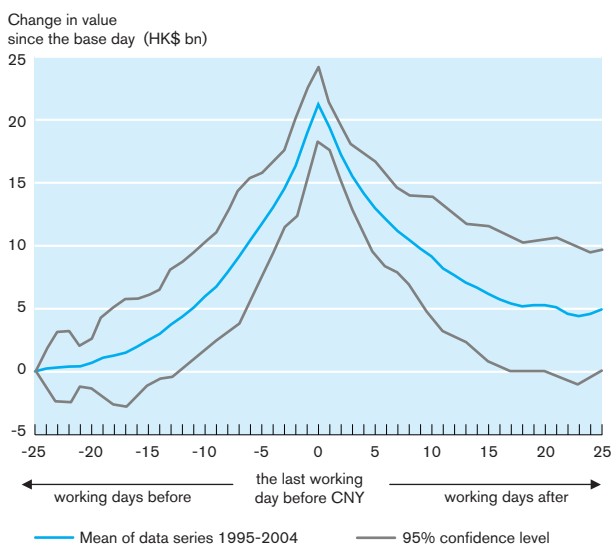
IV. A SIMPLE ESTIMATE OF THE SEASONAL PATTERN AROUND CNY

This section presents a simple estimate of the seasonal pattern of the cash holdings around the CNY. Daily data over the period of 1995-2004 (except 2000) are used. Specifically, the change in cash in circulation since the base day is calculated for each day over the 25 working days before and after the CNY holidays for each year under review. The base day refers to the 25th working day before the last working day prior to the holidays. The series is then averaged over the sample years to capture the seasonal pattern. The detailed procedures to calculate the mean series are shown in Appendix A.

Chart 5 plots the mean of the value change in cash in circulation around the CNY, together with a 95% confidence band. The series of the mean can be used to estimate cash in circulation in the future.⁹

CHART 5

The estimated seasonal pattern of cash demand around CNY



Notes: Data related to CNY in 2000 are excluded as they are distorted by the transition to 2000.
Source: Staff estimates

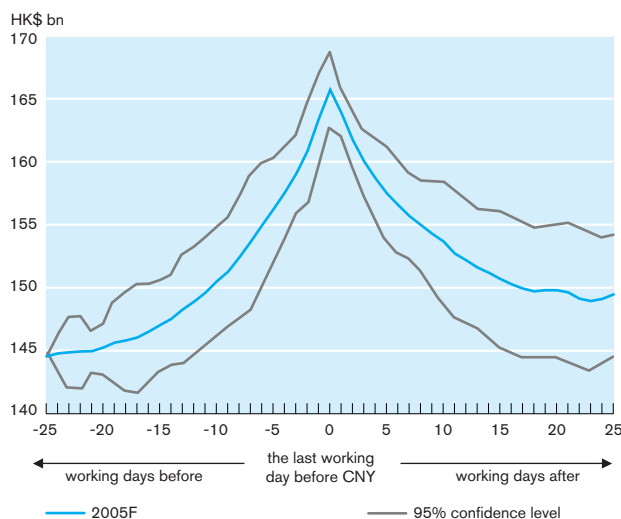
For example, assuming the stock of cash on the base day in 2005 to be 11% higher than a year ago, cash in circulation can be derived by adding the mean series to the figure on the base day (Chart 6).¹⁰

V. CONCLUSION

In summary, the CNY holidays have exerted a stable influence on the demand for cash across years. The demand for currency notes generally starts to increase from the 25th working day and peaks on the last working day before the CNY. It then declines at a similar pace after the holidays, as activity gradually returns to normal levels. The average increase in cash holdings was around HK\$21 billion in the 25 working days prior to the holidays in the years 1995-2004 (except 2000). However, the percentage increase in cash has declined in recent years, partly due to the rapid expansion in cash holdings alongside low interest rates, as well as increased external circulation of the Hong Kong dollar currency.

CHART 6

Forecasts of the stock of cash in circulation around CNY in 2005



Notes: The base day figure for 2005 was estimated to be HK\$144.5 billion.
Source: Staff estimates

⁹ Appendix B shows the daily figure of the mean series.

¹⁰ The rate of growth for 2005 was based on the average rate of growth during 2002-2004.

APPENDIX A

CALCULATION OF THE SEASONAL PATTERN AROUND THE CNY

This Appendix summarises the procedures in calculating the mean of the change in value of cash in circulation over the period 1995-2004 (except 2000). This mean series is used to capture the seasonal pattern of the demand for cash around the Chinese New Year. Specifically,

- It is assumed that the CNY affects the cash demand for a total length of i days, which is defined as 25 working days before and after the last working day ahead of the holidays (τ).
- The stock of cash on the 25th working day prior to the last working day of the CNY (τ) is taken as the base in calculating the change in cash, as cash associated with the festival generally starts to rise from this day.
- The value change in cash in circulation (cc) is calculated as the difference between cash in circulation on the i^{th} day before and after τ and the stock of cash on the base day (equation (A1)). The mean is the sum of the value change of cash on each i^{th} day of the sample years divided by the number of years (equation (A2)).

$$cc_{i,t} = c_{i,t} - c_{-25,t} \quad (\text{A1})$$

$$\overline{cc}_i = \frac{\sum cc_{i,t}}{n} \quad (\text{A2})$$

where

$c_{i,t}$ = cash holdings on the i^{th} day before and after τ in year t ,

$c_{-25,t}$ = cash holdings on the 25th working day before τ ,

τ = the last working day before the CNY holidays,

i = -25, -24, ..., τ , 1, 2, ..., 25 (the length of day affected by the CNY) and τ is denoted as "0",

t = the number of years = 1995, 1996, ... 2004 (except 2000 when the daily cash holdings were distorted by the Y2K effects),

\overline{cc}_i = mean of the value change in cash, and

n = the number of years.

In term of percentage change, equations (A1) and (A2) can be written as follows.

$$rc_{i,t} = \frac{c_{i,t} - c_{-25,t}}{c_{-25,t}} \quad (\text{A3})$$

$$\overline{rc}_i = \frac{\sum rc_{i,t}}{n} \quad (\text{A4})$$

APPENDIX B

Seasonal Pattern Around CNY		Value change (HK\$ bn) Mean
Working Day		
-25		0.0
-24		0.2
-23		0.3
-22		0.4
-21		0.4
-20		0.7
-19		1.1
-18		1.3
-17		1.5
-16		2.0
-15		2.5
-14		3.0
-13		3.7
-12		4.3
-11		5.1
-10		6.0
-9		6.7
-8		7.9
-7		9.1
-6		10.4
-5		11.7
-4		13.0
-3		14.5
-2		16.3
-1		18.9
The last working day before the CNY	0	21.2
	1	19.3
	2	17.2
	3	15.5
	4	14.2
	5	13.0
	6	12.0
	7	11.1
	8	10.5
	9	9.8
	10	9.1
	11	8.2
	12	7.6
	13	7.1
	14	6.6
	15	6.2
	16	5.7
	17	5.4
	18	5.2
	19	5.3
	20	5.3
	21	5.1
	22	4.6
	23	4.4
	24	4.6
	25	4.9

Source: Staff estimates