



Hong Kong and Singapore's Experience on the Impossible Trinity and its Implications for the Mainland

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In the 1960s, Robert A. Mundell and J. Marcus Fleming pointed out in a general equilibrium model that monetary policy is effective in both fixed and floating exchange rate regimes if there is no free flow of capital. However, with free flow of capital, monetary policy will only be effective under a floating exchange rate regime, and ineffective under fixed exchange rate. As such, the Mundell's Impossible Trinity stated that it is impossible to achieve all of the following three policy options at the same time, i.e. stable foreign exchange rate, free capital movement, and independent monetary policy. The policymakers can only choose two out of the above three policy options.

1. Why is it impossible?

Based on the mechanism of the Impossible Trinity, if a fixed exchange rate economy opens to foreign capital flows, tries to have an independent monetary policy and sets its interest rates higher (or lower) than the global level, it will receive substantial capital inflows (or capital outflows) which will be present as long as the interest differential persists. The combination of interest rate differential and a fixed exchange rate sets up an arbitrage opportunity which is irresistible. If the policymakers try to hold down the exchange rate (or support exchange rate) through intervention, this will increase (or decrease) the monetary base and hence lower (or higher) interest rates, frustrating the policymakers' attempt to have an independent monetary policy. Therefore, it is only when the policymakers let their exchange rate floats, an equilibrium is achieved in which they can maintain higher (or lower) interest rates and independent monetary policy, with an appreciating (or depreciating) exchange rate.

The key of the Impossible Trinity rests on the effective operation of uncovered interest rate parity. Arbitrage opportunity will occur if the difference in interest rates between the two economies is not equal to the expected change in exchange rates between their currencies. With free flow of capital, arbitrage activities will occur until the condition of interest rate parity holds again, i.e. no more discrepancy between interest rates and expected change in exchange rates between the

two economies. The arbitrage activities will guarantee equalisation of the returns of similar financial assets denominated in different currencies. As such, the policymakers can only choose one of the following policy options.

i. Allow free flow of capital and implement fixed exchange rate (give up monetary policy):

With free flow of capital and fixed exchange rate, the policymakers could have no control over the monetary base and interest rate level. Capital flows will drive its interest rate towards the world's average, weakening the effectiveness of its monetary policy. Indeed, Hong Kong chooses this policy option, with no capital control and the implementation of a currency board system. The Hong Kong dollar is now linked to the US dollar at a fixed rate of HK\$7.80 to one US dollar, with the interest rate adjustment closely following that of the US.

ii. Allow free flow of capital and implement independent monetary policy (give up fixed exchange rate): With free flow of capital and independent monetary policy, the interest rate differential will lead to capital movement which in turn will affect the exchange rate level and offset the impact of interest rate differences. As such, the capital movement will not affect its monetary base which ensures the policymakers could effectively implement its monetary policy, but not to maintain the exchange rate level. Most of the advanced economies and the relatively large economies adopt this arrangement.

iii. Implement independent monetary policy and fixed exchange rate (restrict capital movement): The above two situations showed that the policymakers could only choose to control the interest rate or exchange rate if there is free flow of capital. It is only when the capital movement is restricted, the policymakers could control both the interest rate and exchange rate at the same time, similar to Malaysia after the Asian Financial Crisis.

2. Hong Kong gives up monetary policy completely

Hong Kong is a small and open economy and is well known for its economic freedom. Hong Kong is the freest economy in the world for 22 consecutive years. It allows free flow of capital movement and chooses fixed exchange rate among the three policy options based on the Impossible Trinity. Thus, Hong Kong gives up its monetary policy. There is such a decision because a stable exchange rate could help corporates better manage risks and foster cross-border trade and financial activities. As Hong Kong is a highly open international trade and financial centre, a stable exchange rate is essential to maintain Hong Kong's economic and social stability.

Since the implementation of the linked exchange rate system, Hong Kong has completely given

up its monetary policy. The Hong Kong dollar is linked to the US dollar at a fixed rate of HK\$7.80 to one US dollar. Moreover, the Hong Kong Monetary Authority (HKMA) undertakes to buy US dollars from licensed banks at HK\$7.75 to one US dollar (strong-side convertibility undertaking) and sell US dollars at HK\$7.85 to one US dollar (weak-side convertibility undertaking), with the Hong Kong dollar allowed to float slightly within the convertibility zone between 7.75 and 7.85. Under the currency board system, the stock and the flow of the Hong Kong dollar monetary base is fully backed by foreign reserves. As a result, Hong Kong gives up its monetary policy completely, with the adjustment of Hong Kong dollar interest rate having to follow that of the US and policymakers having no control of Hong Kong monetary base. The stability of the Hong Kong dollar exchange rate is maintained through an automatic interest rate adjustment mechanism. When there is a decrease in demand for Hong Kong dollar assets and the Hong Kong dollar exchange rate weakens to the convertibility rate, the HKMA stands ready to purchase Hong Kong dollars from banks, leading to a contraction of the monetary base. Interest rates then rise, creating the monetary conditions conducive to capital inflows so as to maintain exchange rate stability. Conversely, if there is an increase in the demand for Hong Kong dollar assets, leading to a strengthening of the exchange rate, banks may purchase Hong Kong dollars from the HKMA. The monetary base correspondingly expands, exerting downward pressure on interest rates and so discouraging continued inflows.

The linked exchange rate system rules out the use of nominal exchange rate movements as a mechanism of adjustment. Thus, the internal cost/price structure of Hong Kong (such as asset prices, wages and consumer prices etc) has to adjust more than would be needed if the exchange rate were free to adjust when the economic cycles between Hong Kong and US do not closely align. However, such internal adjustment is slower than rapid adjustment by the exchange rate, and will negatively affect Hong Kong's short-term economic performance. In particular, the correction of property prices will likely hit domestic consumption and wage cut will also raise recession and deflation risks. This is similar to the situation after the Asian Financial Crisis in 1998 when residential property prices declined by two-thirds and deflation persisted for 68 consecutive months. On the other hand, Hong Kong received huge capital inflows after the global financial crisis. Residential property prices increased four-fold since 2003 and sustained several years of high inflation between 2011 and 2014. Nevertheless, this process is normally accompanied by more durable and necessary structural adjustments within the real economy.

3. Singapore chooses to manage exchange rate, but gives up interest rate adjustment

In Singapore, its monetary policy has been centred on the management of exchange rate since 1980s. The primary objective has been to promote price stability in the medium to long term as a sound basis for sustainable economic growth. The exchange rate movement of the Singapore dollar

could easily affect its domestic price level given the small and open nature of its economy. Thus, exchange rate represents a good target of monetary policy and is relatively controllable through direct interventions by the Monetary Authority of Singapore (MAS) in the foreign exchange markets. Moreover, all Singapore dollars in circulation are fully backed by foreign reserves.

Unlike many central banks around the world, the MAS does not rely on the control over domestic interest rates to promote price stability. In the context of free capital movements, interest rates in Singapore are largely determined by foreign interest rates and investor expectations of the future movements in the Singapore dollar. Domestic interest rates have typically been below the US interest rates and reflect market expectations of a trend appreciation of the Singapore dollar over time.

Indeed, the Singapore dollar is managed against a basket of currencies of its major trading partners. The various currencies are assigned weights in accordance with the importance of the country to Singapore's trading relations with the rest of the world. Compared to a single anchor currency, the Singapore dollar's peg to a basket of currencies should ensure a more stable exchange rate of the currency. However, the MAS never announces the composition and weights of its currency basket. The trade-weighted exchange rate is allowed to fluctuate within a policy band, with the band providing a mechanism to accommodate short-term fluctuations in the foreign exchange markets. In addition, the scope and mid-point of its policy band could be adjusted upward, downward or unchanged depending on the MAS's monetary policy stance.

Generally, the MAS will allow the Singapore dollar to appreciate when inflation is rising. Otherwise, it will slow the pace of appreciation when the inflationary pressure is receding. The appreciation of the Singapore dollar will lower the prices of imported goods and services, leading to a decline of imported inflation. At the same time, a stronger Singapore dollar will increase the prices of its exported goods and services, reducing foreign demand of its exports. This will also lower Singapore's demand on imports and allivate its cost and inflationary pressure.

4. Its implications for the Mainland

i. The Mainland cannot completely give up one of the policy options as stated by the Impossible Trinity

Currently, the Mainland is the second largest economy in the world. With its huge economic size, it is difficult for the Mainland to completely give up independent monetary policy, like the case of Hong Kong. Also, the Mainland is different from a small and open economy, with a much

lower reliance on external trade. Thus, it is not possible for it to adopt a system similar to Singapore which can promote price stability through the management of exchange rate. In respect of capital flows, the Mainland is the largest trading entity in the world and its relationship with the global economy is inseparable. Thus, it is difficult for the Mainland to implement stringent capital control, like returning to the time when the current and capital accounts had not opened or partially-opened. Indeed, once there is an opening of the capital control, even though it is small, it will bring arbitrage opportunities to the market. Going ahead, with further RMB internationalisation and stronger tie of the Mainland with the global economy, it is not possible to implement stringent capital control again.

Meanwhile, even though the People's Bank of China (PBoC) has implemented a more market-based RMB fixing mechanism and has increasingly managed market expectation for a wider movement of RMB exchange rate, the Mainland is not likely to completely give up its intervention in the foreign exchange markets, like the British pound, euro and Japanese yen (In fact, both the European Central Bank and Bank of Japan have adopted negative interest rates and quantitative easing measures which could also be considered as indirect intervention on their currencies). It is because the exchange rate movement could be very large, as the one-year movement could reach 40% to 50%. In addition, the financial markets, corporates and households have yet fully prepared (or hedged) for a wider RMB exchange rate movement. Any large movement of RMB exchange rate could easily reiterate concerns over the Mainland economy, exacerbate asset markets correction, and accelerate capital outflows. Thus, the Mainland's policymakers are not likely to completely give up its intervention in the foreign exchange markets. As a result, even though the Mainland is restrained by the Impossible Trinity to choose only two of the three policy options of independent monetary policy, stable exchange rate and free capital movement, it cannot completely give up one of the above policy options, like Hong Kong and Singapore. The Mainland has to strike a fine balance and make compromise among the three policy options.

ii. The effectiveness of liquidity management measures is asymmetric

Over the past years, the economic growth and prospect of the Mainland was much better than many other economies in the world. With higher investment returns and profitability, the interest rates in the Mainland were also higher than the rest of the world, reflecting the bright prospect and better profit opportunities. This attracted persistent capital inflows for a long period of time. In order not to affect the effectiveness of monetary policy and the economy, the Mainland authorities used a wide range of liquidity management measures (such as required reserve ratio) to offset the impact of capital inflows on its monetary base and manage the pace of credit growth. However, the

effectiveness of liquidity management measures is asymmetric, with the offsetting impact of those measures being more effective during the time of capital inflows than capital outflows. It is because the reversal of some liquidity management measures might also intensify capital outflows and depreciation pressure which will bring new risks to the economy and financial markets.

Under normal circumstances, foreign reserve could act as a buffer if the policymakers would like to manage both the interest rate and exchange rate when there is free movement of capital. Similar to the abovementioned liquidity management measures, the impact of the accumulation and outflows of foreign reserve is also asymmetric. Rapid outflows of foreign reserve could easily lead to market panic.

iii. Stabilising RMB expectation might be a top priority

As mentioned above, the effectiveness of liquidity management measures is asymmetric. Before the adjustment of RMB fixing mechanism in August 2015, the Mainland was rather successful in maintaining a largely stable exchange rate, having the flexibility in implementing monetary policy as well as gradually relaxing capital control. This was largely because the PBoC could effectively manage the market expectation on RMB exchange rate and use the liquidity management measures (such as required reserve ratio) to manage the impact of capital movement. However, the adjustment of RMB fixing mechanism in August 2015 somewhat intensified the concerns over the Mainland economy and the RMB exchange rate outlook and accelerated the pace of capital outflows. Against this background, the further easing of monetary policy would likely reduce the attractiveness of the RMB, intensify capital outflows and further affect the stability of RMB exchange rate. In addition, even though the Mainland still has ample foreign reserve which should normally be used as a buffer against capital movement, the market only focuses on the tens to hundreds of billions of foreign reserve outflows each month, further deepening the concerns over its economy and exchange rate stability. As a result, the Mainland is currently restrained by the Impossible Trinity and has to strike a fine balance and make compromise between the pros and cons among the three policy options (independent monetary policy, stable exchange rate and free flow of capital). Based on the current situation, stabilising RMB expectation might be a top priority. It is only when the RMB exchange rate is stabilised, the monetary policy and free capital movement will have a wider room of manoeuvre.

主要經濟指標 (Key Economic Indicators)

一. 本地生產總值 GDP	2013	2014	2015/Q2	2015/Q3
總量 (億元) GDP(\$100 Million)	20,961	21,446	5,332	5,717
升幅 (%) Change(%)	2.9	2.3	2.8	2.3
二. 對外貿易 External Trade	2013	2014	2015/12	2015/1-12
外貿總值 (億元) Total trade(\$100 Million)				
港產品出口 Domestic exports	544	553	37	469
轉口 Re-exports	35,053	36,175	3,055	35,584
總出口 Total exports	35,597	36,728	3,092	36,053
進口 Total imports	40,607	42,190	3,549	40,464
貿易差額 Trade balance	-5,010	-5,463	-457	-4,411
年增長率 (%) YOY Growth(%)				
港產品出口 Domestic exports	-7.6	1.7	-8.1	-15.2
轉口 Re-exports	3.8	3.2	-1.1	-1.6
總出口 Total exports	3.6	3.2	-1.1	-1.8
進口 Imports	3.8	3.9	-4.6	-4.1
三. 消費物價 Consumer Price				
綜合消費物價升幅 (%) Change in Composite CPI(%)	4.3	4.4	2.5	3
四. 樓宇買賣 Sale & Purchase of Building Units			2015/12	2016/1
合約宗數 (宗) No. of agreements	70,503	81,489	5,294	3,123
年升幅 (%) Change(%)	-29.9	15.6	-30.1	-62.4
五. 勞動就業 Employment			2015/9-11	2015/10-12
失業人數 (萬人) Unemployed(ten thousands)	11.84	14.95	12.9	12.2
失業率 (%) Unemployment rate(%)	3.4	3.2	3.3	3.3
就業不足率 (%) Underemployment rate(%)	1.5	1.5	1.3	1.4
六. 零售市場 Retail Market			2015/12	2015/1-12
零售額升幅 (%) Change in value of total sales(%)	11.0	-0.2	-8.5	-3.7
零售量升幅 (%) Change in volume of total sales(%)	10.6	0.6	-6.1	-0.3
七. 訪港遊客 Visitors				
總人數 (萬人次) arrivals (ten thousands)	5,430	6,077	506	5,931
年升幅 (%) Change(%)	11.7	11.9	-10.7	-2.5
八. 金融市場 Financial Market			2015/11	2015/12
港幣匯價 (US\$100=HK\$)				
H. K. Dollar Exchange Rate (US\$100 = HK\$)	775.4	775.6	775	775
貨幣供應量升幅 (%) change in Money Supply(%)				
M1	9.7	13.0	18.8	15.4
M2	12.3	9.5	3.9	5.5
M3	12.4	9.6	3.9	5.5
存款升幅 (%) Change in deposits(%)				
總存款 Total deposits	10.6	9.7	6.0	6.7
港元存款 In HK\$	5.1	9.3	11.4	10.7
外幣存款 In foreign currency	16.2	10.1	1.1	3.1
放款升幅 (%) in loans & advances(%)				
總放款 Total loans & advances	16.0	12.7	2.9	3.6
當地放款 use in HK	13.8	12.1	1.7	3.5
海外放款 use outside HK	21.4	14.2	5.7	3.6
貿易有關放款 Trade financing	43.8	-1.4	-20.6	-16.3
最優惠貸款利率 (%) Best lending rate (%)	5.0000	5.0000	5.0000	5.0000
恆生指數 Hang Seng index	23,306	23,605	21,996	21,914