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A STRUCTURAL INVESTIGATION INTO THE PRICE AND WAGE DYNAMICS IN HONG KONG

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Abstract

This paper estimates the degree of wage and price flexibility of the Hong Kong economy with the use of a stylised dynamic stochastic general equilibrium (DSGE) model developed for the Hong Kong economy. It also studies the factors contributing to deflation in Hong Kong following the Asian financial crisis (i.e. during the period from 1998 to 2003) and finds that declining import prices were the main culprit. Consistent with earlier studies on the subject and anecdotal evidence, wages and prices in Hong Kong are found to be (relatively) flexible.

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EXECUTIVE SUMMARY:

- *The main objective of this paper is to investigate and characterise the degree of nominal wage and price rigidity in the Hong Kong economy with an internally consistent theoretical model. To this end, we build and estimate a stylised dynamic stochastic general equilibrium model for the Hong Kong economy.*

- *Model results suggest that both nominal wage and nominal prices in Hong Kong are relatively flexible. Compared our parameter estimates with the corresponding estimates for other economies in the literature, for example Canada, our results suggest that the degree of nominal rigidity in Hong Kong is lower than in Canada. The result also suggests that prices of imported goods are more flexible than prices of domestic-produced goods.*

- *The estimated model is then utilised to study the dynamic of inflation during deflationary period following the Asian financial crisis. We find that the declining import prices are the major contributing factor to the deflation that Hong Kong experienced during the period.*

- *One caveat to the results in this paper is that the estimates could be sensitive to the assumptions, particularly on the structure of the underlying model. Furthermore, some important features of the Hong Kong economy may not be well captured by the model. For example, the residential housing market is not included in the model of this paper. Notwithstanding these potential drawbacks, this paper represents a first step in building and estimating a fully-fledged DSGE model for the Hong Kong economy.*

I. INTRODUCTION

The credibility and continued viability of the Linked Exchange Rate system for the Hong Kong dollar depend on flexible wages and prices in the Hong Kong economy. Such flexibility allows the Hong Kong economy to adjust to external shocks, through adjustments in the Hong Kong-dollar real exchange rate, even though the nominal exchange rate of the Hong Kong dollar remains fixed to the US dollar.

The question of wages or prices flexibility in Hong Kong had been investigated either directly or indirectly in earlier works (e.g. Pauwels and Zhang (2008), Genberg and Pauwels (2005), McNelis (2009), Funke et al. (2009), Yetman (2009)), and their findings suggest that wages and prices in Hong Kong are flexible. Among these earlier studies, Genberg and Pauwels (2005) analyse the influence of foreign shocks on the Hong Kong economy using econometric regression, and find that foreign shocks accounted for a significant proportion of the domestic fluctuation. They then estimate wages and prices dynamics of Hong Kong using a reduced form open economy model that includes the following set of equations: an open economy version of the Phillips Curve, an IS curve, a wage dynamics equation (á la Blanchard and Katz (1999)), and Okun's Law. The estimated model allows the authors to explain what caused the deflation in Hong Kong following the Asian financial crisis. They find that the deflation experienced during that period was largely caused by declines in prices of imports.

While Genberg and Pauwels (2005) produced an important piece of work in characterising wages and prices dynamics of Hong Kong, there is room for further development. In particular, the model is not developed in a structurally consistent manner, meaning that there is no cross-equation restriction imposed on the parameter estimates. Therefore, there is no guarantee that the parameter estimates would be consistent with one another. Our paper attempts to improve the model in this direction.

We use a framework that is very similar to Justiniano and Preston (2008) (JP). In JP, the authors build a small open economy dynamic stochastic general equilibrium model (DSGE model) based on Galí and Monacelli (2005). However, when they estimate their model using Canadian and US data, they find that their estimated model cannot account for the influence of foreign disturbances. In particular, shocks from the U.S. can explain only a very little proportion of the fluctuation in the Canadian economy, contrary to other pieces of econometric evidence.

Adolfson et al. (2007) build an even richer small open economy DSGE model and estimate their model with euro-area data. They also find that the foreign shocks can only account for a negligible share of fluctuation in the observed data. Similar results can be found in Cúrdia and Finocchiaro (2007) which, instead of assuming flexible exchange-rate arrangement as in JP and Adolfson et al. (2007), build and estimate

a model with target zone exchange-rate arrangement using the data on Sweden. Thus, it seems that the DSGE literature is unable to capture the influence of foreign disturbances on a small open economy.

Bearing in mind the possible drawback mentioned, we choose to focus our paper on estimating the degree of wages and prices flexibility of the Hong Kong economy, and to analyse the underlying cause of the deflationary period that Hong Kong experienced following the Asian financial crisis. Our findings can be summarised in the following: first, we find that, consistent with earlier works and other anecdotal evidence, wages and prices in Hong Kong are (relatively) flexible. Secondly, we find that declining import prices were largely responsible for the deflation that Hong Kong experienced following the Asian financial crisis. The second finding corroborates the explanation provided by Genberg and Pauwels (2005) on the cause of deflation in Hong Kong during that period.

The remainder of paper is organised as follows. We present the log-linearised version of the full model in Section II, with the full description of the model presenting in the Appendix and available upon request. Section III describes the dataset and the estimation procedure that we used. Section IV presents estimation results. Section V concludes.

II. THE LOG-LINEARISED MODEL

We estimate a log-linearised version of the model by the Bayesian method. Structural equations in the model are log-linearised around a non-stochastic steady state and zero net asset position (i.e., the equilibrium where the net holding of domestic and US denominated debt are zero). Several additional shocks are added to the log-linearised version for estimation purpose. Log-deviation of a variable X_t is denoted by $x_t = \log \frac{X_t}{X}$, where X is the non-stochastic steadystate value of X.

To begin with, the log-linearised version of the Euler equation, for consumption c_t, which governs the decision of consumption and saving, intertemporally in the domestic economy is

$$c_t - hc_{t-1} = E_t(c_{t+1} - hc_t) - \sigma(1-h)(i_t - E_t\pi_{t+1}) + \sigma(1-h)(\varepsilon_{g,t} - E_t\varepsilon_{g,t+1}) \qquad (1)$$

where E_t denotes the expectation operator taken over the information set accumulated until time t, h is the habit parameter which takes value between 0 and 1, σ is the intertemporal elasticity of substitution. $\varepsilon_{g,t}$ is the labour disutility shock which follows

an autoregressive process of order 1 (AR(1)).

Goods market clearing conditions gives

$$y_t = (1-\tau)c_t + \{\tau\eta(1-\tau)+\tau\varsigma\}tot_t + \tau\varsigma\psi_{F,t} + \tau y_t^W \tag{2}$$

where y_t is the domestic output (superscript *W* denote *The World*), τ is the parameter which determines the degree of trade-openness, η is the elasticity of substitution between the domestic-produced composite goods and the foreign-produced composite goods in domestic economy, ς is the elasticity of substitution between the domestic-produced composite goods and the foreign-produced composite goods in the world, $\psi_{F,t} = s_t^W + p_t^{*,W} - p_{F,t}$ and $tot_t = p_{F,t} - p_{H,t}$ is the terms of trade in log-deviation form. Taking time difference gives $\Delta tot_t = \pi_{F,t} - \pi_{H,t}$. The terms of trade and the real exchange rate are related as follows:

$$\begin{aligned} q_t &= s_t^W + p_t^{*,W} - p_t \\ &= \psi_{F,t} + (1-\tau)tot_t \end{aligned} \tag{3}$$

Log-linear approximation to firm's price setting problems yields:

$$\pi_{H,t} - \gamma_H \pi_{H,t-1} = \xi_H (w_t - \varepsilon_{a,t} + \pi ot_t) + \beta E_t(\pi_{H,t+1} - \gamma_H \pi_{H,t}) + \sigma_{ch,t} e_{ch,t} \tag{4}$$

where $\pi_{H,t}$ is the inflation rate of domestic-produced composite, w_t is the wage inflation rate, β is the subjective discount rate of households, who are the owners of the domestic-composite-produced firm. γ_H measures the degree of indexation. $e_{a,t}$ is the economy wide technology shock, $e_{ch,t}$ is the cost-push shock to domestic production sector (*domestic cost-push shock)* and $\sigma_{ch,t}$ is its standard error. The coefficient $\xi_H = \alpha_H^{-1}(1-\alpha_H)(1-\alpha_H\beta)$, where α_H is the probability of resetting the price in the next period. α_H therefore measures the degree of price rigidity in the domestic-composite goods sector.

Analogously, taking log-linear approximation to import sector gives the process of inflation of foreign composite in domestic currency, $\pi_{F,t}$, as

$$\pi_{F,t} - \gamma_F \pi_{F,t-1} = \xi_F \psi_{F,t} + \beta E_t(\pi_{F,t+1} - \gamma_F \pi_{F,t}) + \sigma_{cf,t} \varepsilon_{cf,t} \tag{5}$$

where

$$\xi_F = \alpha_F^{-1}(1-\alpha_F)(1-\alpha_F\beta) \tag{6}$$

and $e_{cf,t}$ is a cost-push shock to the import sector (*foreign cost-push shock*) which follows an AR(1) process. All other symbols yield identical structural meaning as in equation (4).

The dynamic of wage inflation is given by

$$\pi_t^W - \gamma_W \pi_{t-1} = \beta E_t(\pi_{t+1}^W - \gamma_W \pi_t) + \xi_W(\upsilon_t - w_t + \varepsilon_{l,t}) \tag{7}$$

where

$$\upsilon_t = \varphi(y_t - \varepsilon_{a,t}) + \frac{1}{\sigma(1-h)}(c_t - hc_{t-1})$$
$$\xi_W = \alpha_W^{-1}(1+\varphi\theta_W)^{-1}(1-\alpha_W)(1-\alpha_W\beta) \tag{8}$$

The real wage satisfies the following identity

$$w_t = \pi_t^W - \pi_t + w_{t-1} \tag{9}$$

The log-linear uncovered interest-rate parity condition gives

$$i_t - i_t^{US} = E_t\Delta s_{t+1}^{US} - \chi a_t - \tilde{\phi}_t \tag{10}$$

, where i_t is the domestic nominal interest rate (superscript *US* denotes the interest rate of US), a_t is the external position of the domestic economy. χ is the semi-elasticity external premium with respect to the external position of the domestic economy. $\tilde{\phi}$ is a shock to the premium follow an AR(1).

The flow budget constraint of the economy implies

$$c_t + a_t = \beta^{-1}a_{t-1} - \tau(tot_t + \psi_{F,t}) + y_t \tag{11}$$

which pins down the evolution of net external position of the domestic economy.

The domestic inflation needs to satisfy

$$\pi_t = \pi_{H,t} + \tau \Delta tot_t \tag{12}$$

Finally, we assume the dynamics of the inflation rate of foreign composite in foreign currency ($\pi^*_{F,t}$) is as follow to close the model:

$$\pi^*_{F,t} = \rho_{pp}\pi^*_{F,t-1} + \rho_{py} y_{t-1}^{W} + \sigma_{py} e_{y,t} + \sigma_{pp} e_{F,t} \tag{13}$$

where all shocks (e) are distributed as standard normal.

III. DATA AND ESTIMATION

The sources of our dataset include the Census and Statistics Department of the HKSAR Government, CEIC, and database maintained in Hong Kong Monetary Authority. The variables that we used in our estimation include real GDP per capita, GDP deflator (which measures the home-composite price level), nominal wage index, composite CPI, total consumption per capita, price index of export, price index of import, 3-month Hong Kong Interbank Offer Rate, 3-month Federal Fund Rate, world GDP, world inflation, and nominal effective exchange of Hong Kong dollar published by the IMF quarterly. Variables are seasonally adjusted (where appropriate) and then H-P filtered. Deviation from the H-P filtered trend is then used for estimation purposes. Our pre-estimation treatment of variables follows Lubik and Schorfheide (2006), a commonly used approach. The sample period is from the second quarter of 1985 to the fourth quarter of 2007. The model is estimated by Bayesian method and implemented by DYNARE (version 4.04), which is standard in the literature.

Following Cúrdia and Finocchiaro (2007) and others, we first estimate a Vector Autoregressive (VAR) system formed by the world output and US interest rate processes and keep the parameter values fixed through out the estimation. Specifically, we assume that the world demand for domestic composite (in log deviation from steadystate), the US interest rate forms the following vectored autoregressive system with one lag as follow

$$\begin{aligned} y_t^{W} &= \rho_{yy} y_{t-1}^{W} + \rho_{yi} i_{t-1}^{US} + \sigma_{yy} e_{y,t} \\ i_t^{US} &= \rho_{ii} i_{t-1}^{US} + \rho_{iy} y_{t-1}^{W} + \sigma_{ii} e_{i,t} + \sigma_{iy} e_{y,t} \end{aligned}$$

The estimation results for the VAR process are presented in Table 1.

Table 1: VAR Process Estimation Results

ρ_{YY}	0.90*** (0.06)	ρ_{iY}	0.93*** (0.02)
ρ_{Yi}	-0.02 (0.02)	ρ_{ii}	0.24*** (0.06)
σ_{YY}	0.004	σ_{ii}	0.004
		σ_{iY}	0.001

* indicates significance at 10% level

** indicates significance at 5% level

*** indicates significance at 1% level

IV. ESTIMATION RESULTS

We begin with a discussion on parameter estimates, followed by a historical decomposition exercise on the development of general price inflation in Hong Kong. In order to provide a better judgment on the magnitude and significance of our estimate, we compare our results with those in JP whenever possible.

While our estimation allows us to estimate most of the parameter in the model, we focus the discussion on α_H, α_F and α_W, which represents the degree of nominal rigidities in Hong Kong. It should be noted here that four of the structural parameters, which are known to be difficult to estimate accurately or identify alone with other structural parameters, are calibrated according to commonly used value in the literature. Table 2 summarises the definition of structural parameters of the model.

Table 2: Definition of Structural Parameters and Shocks

Structural Parameter	Definition
$\beta = 0.99$	Subjective Discount Factor, Calibrated
$\theta = 8$	Elasticity of Substitution between intermediate goods, Calibrated
$\theta_W = 8$	Elasticity of Substitution between labor skill, Calibrated
$\chi = 0.01$	Semi-elasticity of external premium, Calibrated
ψ	Inverse Frisch Elasticity of Labour supply
σ	Intertemporal Elasticity of Substitution
α_H	Probability of fixing the price for one more period, domestic producers
α_F	Probability of fixing the price for one more period, foreign goods importers
α_W	Probability of fixing the wage for one more period
γ_H	Degree of indexation, domestic price
γ_F	Degree of indexation, import price
γ_W	Degree of indexation, wage
h	Habit Persistence
τ	Trade Openness
η	Elasticity of Substitution between Domestic and Foreign Composite, domestic economy
ς	Elasticity of Substitution between Domestic and Foreign Composite, The World
ρ_a	Persistence: Technology
ρ_l	Persistence: Labor Supply
ρ_g	Persistence: Preference
ρ_{cf}	Persistence: Foreign Cost-Push shock
ρ_{PP}	Persistence: Import price at the dock
ρ_{Py}	Lagged impact of world output on import price at the dock
σ_{Py}	Correlation: World Demand shock and Import price at the dock
σ_a	Volatility: Innovation to Technology
σ_l	Volatility: Innovation to Labor Supply
σ_g	Volatility: Innovation to Preference
σ_{ch}	Volatility: Innovation to Domestic Cost-push shock
σ_{cf}	Volatility: Innovation to Foreign Cost-push shock
σ_ϕ	Volatility: Innovation to external premium shock
σ_{PP}	Volatility: Innovation to import price at the dock

Table 2: Definition of Structural Parameters and Shocks (Continued)

Shocks	
e_a	Innovation to Technology
e_l	Innovation to Labor Supply
e_g	Innovation to Preference
e_{ch}	Innovation to Domestic Cost-push shock
e_{cf}	Innovation to Foreign Cost-push shock
e_f	Innovation to external premium shock
e_{pp}	Innovation to import price at the dock

a. Parameter Estimates

Table 3 presents the full set of the estimates of the posterior. Priors for each parameter of interest are also presented in the same table. There is no consensus on the shape of priors that should be used for estimation. We made our choices based on Lubik and Schorfheide (2006) and JP, which ensures that the choices are common in the literature and estimation results are comparable with other studies. Priors are also chosen to be relatively diffuse to reflect the fact that we do not have precise prior information on parameters.

Table 3: Posterior Summary Statistics of Estimated Parameters

Parameter	Prior			Posterior					
	Distribution	Mean	Std./D.F.	Mean	Std.	Median	Mode	90% Forecasting Confident Interval	
								Lower Bound	Upper Bound
φ	Gamma	1.5	0.15	1.513	0.147	1.507	1.491	1.268	1.755
σ	Gamma	1	0.1	0.831	0.087	0.826	0.831	0.690	0.975
α_H	Beta	0.375	0.075	0.632	0.052	0.637	0.655	0.539	0.726
α_F	Beta	0.375	0.075	0.432	0.076	0.428	0.430	0.307	0.557
α_W	Beta	0.375	0.075	0.459	0.048	0.459	0.437	0.377	0.540
γ_H	Beta	0.5	0.15	0.425	0.155	0.415	0.383	0.183	0.663
γ_F	Beta	0.5	0.15	0.321	0.131	0.307	0.269	0.107	0.520
γ_W	Beta	0.5	0.15	0.377	0.123	0.370	0.352	0.183	0.567
h	Beta	0.8	0.025	0.845	0.021	0.846	0.842	0.810	0.879
τ	Beta	0.4	0.02	0.422	0.020	0.422	0.423	0.389	0.457
η	Gamma	0.9	0.1	0.528	0.059	0.525	0.518	0.428	0.619
λ	Gamma	1.5	0.2	1.068	0.121	1.061	1.068	0.865	1.270
ρ_a	Beta	0.8	0.1	0.922	0.029	0.926	0.939	0.872	0.976
ρ_l	Beta	0.8	0.1	0.493	0.079	0.492	0.501	0.364	0.622
ρ_g	Beta	0.8	0.1	0.576	0.091	0.578	0.558	0.434	0.719
ρ_{cf}	Beta	0.8	0.1	0.917	0.027	0.925	0.939	0.863	0.970
ρ_{pp}	Beta	0.8	0.1	0.500	0.056	0.502	0.515	0.410	0.592
ρ_{py}	Beta	0.8	0.1	0.865	0.064	0.876	0.904	0.761	0.977
σ_{py}	Normal	0	2	0.015	0.006	0.015	0.014	0.004	0.026
σ_a	Inverse Gamma	0.1	Inf	0.048	0.009	0.046	0.041	0.031	0.064
σ_l	Inverse Gamma	0.1	Inf	0.666	0.141	0.637	0.556	0.373	0.932
σ_g	Inverse Gamma	0.1	Inf	0.185	0.022	0.183	0.171	0.146	0.225
σ_{ch}	Inverse Gamma	0.1	Inf	0.042	0.006	0.041	0.040	0.031	0.052
σ_{cf}	Inverse Gamma	0.1	Inf	0.149	0.043	0.143	0.135	0.076	0.224
σ_ϕ	Inverse Gamma	0.1	Inf	0.014	0.001	0.014	0.013	0.012	0.015
σ_{pp}	Inverse Gamma	0.1	Inf	0.061	0.005	0.061	0.059	0.052	0.071

Most of the parameter estimates (defined as the posterior mean and median, which are quite close to each other in our case) are considered reasonable. The estimates of intertemporal elasticity of substitution and elasticity of labour supply in Hong Kong are slightly higher than those in Canada as estimated in JP. Nonetheless, they still lie in the range that is consistent with similar studies. Estimate of the habit parameter *h* is marginally higher than that in JP. Estimate of the degree of openness τ is higher than that in JP for Canada. The elasticity of substitution between domestic and foreign goods is 1.068, which is lower than that in JP and in Chari, Kehoe and McGrattan (2002). The results are consistent with the general perception on the openness of Hong Kong towards to the world. Since Hong Kong is a service-based economy and imports most of the manufactured products for domestic consumption, the import share in the consumption basket is high, and the degree of substitutability between domestic and foreign goods is low. Technology shock is very persistent ($\rho_a \approx 0.92$) but still accords with the usual calibrated value in the macroeconomics literature. The labour supply shock and preference shock are much less persistent than the technology shock ($\rho_l \approx 0.49$ and $\rho_g \approx 0.58$).

b. Nominal Rigidities

How rigid are nominal prices and wages in Hong Kong? Our posterior analysis sheds light on this question. The posterior median estimates of α_H, which measures the frequency of price change of domestic good producer, is 0.637. It implies that, in each quarter, about 36% of domestic goods producers in Hong Kong reset their price to optimal level while the rest will just adjust the price to inflation. On the other hand, the posterior median estimate of α_F is 0.432, which implies that about 54% of importers change their price to optimal level in each quarter on average. Compared these two parameter estimates with the corresponding parameter estimates reported in JP for Canada (posterior estimate of α_H: 0.839 and posterior estimate of α_F: 0.603), our results suggest that the nominal price of domestic and import goods in Hong Kong is more flexible. The result also suggests that the imported goods price is relatively more flexible than the domestic produced goods price.

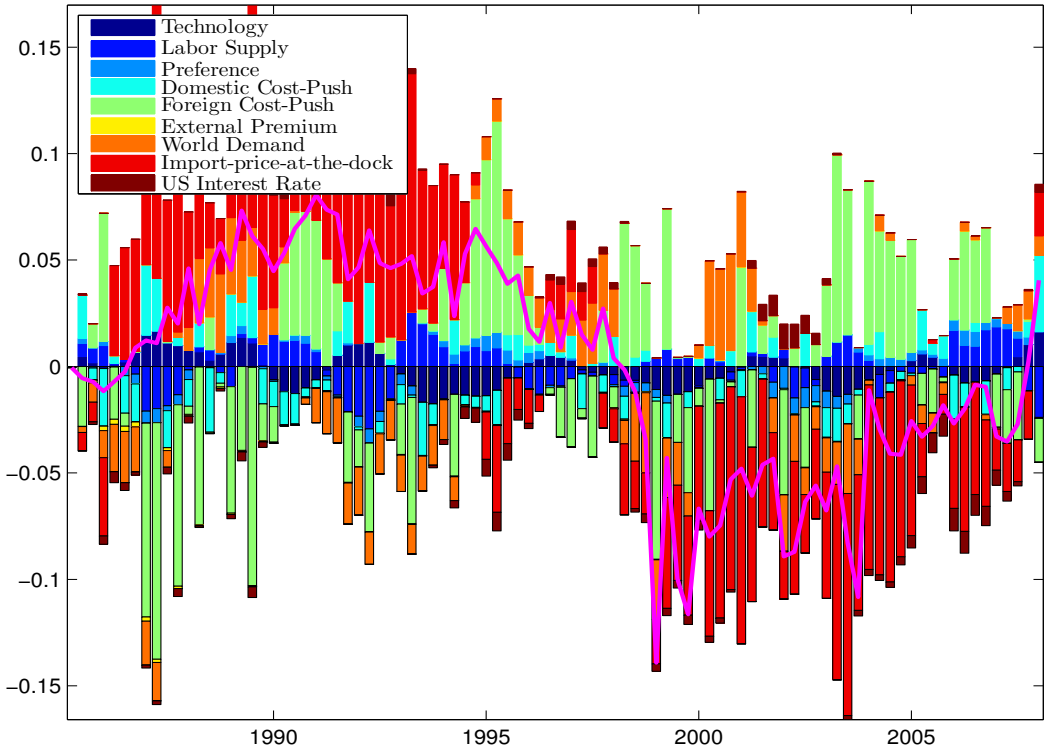
The posterior median estimates of α_W is 0.459 while corresponding estimate of Canada is 0.759, which shows that the nominal wage in Hong Kong adjusts much faster . It implies that in each quarter, about 54% of workers in Hong Kong reset their wage to optimal level while the rest will just adjust their wage to inflation only. This result may be attributable to the openness of the Hong Kong economy to the world labour market. As a regional financial centre in Asia, a lot of multinational companies set up offices and headquarters in Hong Kong, which attract talents around the world to

search for jobs and relocate to Hong Kong. The high mobility of labour therefore intensifies competitions in the labour market in Hong Kong, introducing a relative high degree of nominal wage flexibility.

c. Historical Decomposition

We proceed to characterise the development of general price inflation in Hong Kong. We do so by carrying out a historical decomposition of the consumer-price inflation, based on the model estimates of various structural shocks. Such decomposition allows us to draw insights of how each individual shock contributed to the development of consumer-price inflation, in particular the deflation following the Asian financial crisis. Based on the result obtained, we can then examine the extent to which the deflation was caused by weak prices of imports, an argument put forward by Genberg and Pauwels (2005). Chart 1 shows that consumer-price inflation experienced a large fall following the Asian financial crisis, and the fall can be attributed to a number of structural shocks. Nevertheless, a closer inspection of the figure would suggest that the impact of the shock to import prices at the dock and foreign cost-push shock appeared to be relatively larger compared with other shocks. In particular, the shock to import prices at the dock persistently posed a large and negative drag on the consumer-price inflation in years following the crisis. While we are not sure whether such negative shock originated mainly from weak global prices or appreciated exchange rate at that time, this finding is consistent with that of Genberg and Pauwels (2005) – weak import prices could be the main culprit for the deflation during that period.

Chart 1: Historical Decomposition of CPI Inflation



On the other hand, while the foreign cost-push shock may be important in explaining the deflation during that period, the evidence available appears to be comparatively less conclusive than that of the shock to import prices at the dock. This is due to the fact that the cost-push shock occasionally contributed positively to inflation, and that contribution was sometimes quite large, unlike the shock to import prices at the dock, where contribution was persistently negative following the crisis.

To conclude, our results suggest that declining import prices were possibly the underlying cause of the deflation, corroborating the claim of Genberg and Pauwels (2005). Nevertheless, it is worthy of note that while the historical decomposition exercise is useful in understanding the fluctuation of the observed data, the results should still be interpreted with caution, given that the model itself is an imperfect description of reality as some important features of the Hong Kong economy may not be well captured by the model. For example, the residential housing market is commonly understood as having a large impact on fluctuations of prices and output of the Hong Kong economy, but that market is not included in the model of this paper.

V. CONCLUSION

We estimate a stylised DSGE small open economy model for the Hong Kong economy, with the aims of characterising the degree of wage and price flexibility of the economy, and explaining the cause of deflation that Hong Kong experienced after the Asian financial crisis.

Our results indicate that wages and prices in Hong Kong are quite flexible relative to other economies, such as Canada. Our analysis also suggests that declining import prices were the major cause of the deflationary period. These results are largely consistent with the findings of Genberg and Pauwels (2005), which used a different and less structured empirical methodology.

One caveat to our results, as is well known in the literature on Bayesian estimation of DSGE model, is that estimates on structural parameters could be sensitive to the assumptions on the priors of these parameters, and the assumptions on the underlying structure of the model. Notwithstanding these potential drawbacks, our works represents a first step in building and estimating a fully-fledged DSGE model for the Hong Kong economy.

Subsequent extensions to our work, we believe, lie in the following major directions. First, the residential housing market in Hong Kong is widely perceived as an important component of the Hong Kong economy. The rental component is almost 30% of the CPI basket alone. This means that any boom-bust cycle in the Hong Kong housing market will feed in consumer prices directly, as well as indirectly through their wealth and collateral effects on aggregate demand. Thus, including the housing market will be essential in modeling the Hong Kong economy. Secondly, the financial services industry has become an important driver of productivity growth in Hong Kong. As shown in Leung et al. (2009), Hong Kong's stock market is large relative to its GDP, and residents' participation in the stock market activity is high. Any fluctuation in stock prices could, therefore, generate a positive and significant wealth effect, which will also be needed to be captured carefully in a full DSGE model of Hong Kong. Initial work in this area had been by Funke et al. (2009).

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