Monetary Policy Towards Inclusive Growth: The Case of Korea

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I. Introduction

- After half a decade into the global financial crisis (GFC), while economic growth in many economies is picking up, labor market conditions continue to be staggered.
- Some SEACEN economies such as Korea, Philippines, Singapore, and Chinese Taipei, have shown that growth has no significant effect on employment both before (2001-2007) and after the GFC (2008-2011) (Hanusch, 2012).
- On the other hand, in Malaysia and Thailand, economic growth has a significant impact on employment only post-GFC.

- In this sense, jobless growth seems prevalent in the SEACEN region despite strong economic growth.
- Furthermore, many economies in Asia and the Pacific region have experienced rising inequality as reflected by the Gini coefficient of per capita expenditure during the last two decades (Zhuang et al., 2014).
- Therefore authorities in the Asia-Pacific region are finding ways to achieve higher employment level or lower unemployment rate.

- In this regard, this paper explores the case of Korea, specifically on:
- How interest rate policy of central banks can contribute to inclusive growth by expanding and stabilizing employment.
- Whether the relationship between interest rate and employment is symmetric between the periods of interest rate on the rise and decline.
- While the Korean case is considered, the methodology employed can also be applied to other economies.

II. 1 Issues in Empirical Test in a VAR Model

- The variables used in the empirical are growth (aggregate demand), exchange rate and price besides interest rate and employment.
- These macro variables have a typical characteristic of bi-directional causality to each other. In this regard, a VAR model is estimated and the impulse response functions are used to analyze the effect of policy rate on employment.
- In using the VAR model, the particular ordering of variables in the model and stationarity of variables must be taken into account.

- The ordering of variables are related to the identification of the model and in our particular VAR model, the issue is the sequencing of the variables.
- When interest rate as a policy variable is put before employment and other variables, it implies that a change in policy interest rate has an instantaneous effect on employment
- while the response of interest rate (monetary policy) to changes of the economic environment (namely other variables in the model) is not contemporaneous but rather with lags.

- In contrast, in case of putting the interest rate variable after employment or other variables, the model implies that interest rate (monetary policy) responds to changes in economic environment without a lag
- while it takes time for interest rate to affect the other variables of interest (e.g., employment).

- It is noted that monetary policy normally affect the real economy through numerous transmission channels with long and variable lags.
- In Korea, for example, it takes about one year for monetary policy to impact aggregate demand (The Bank of Korea, 2005).
- In this regard, in our VAR model, employment and other variables are put before the interest rate policy variable.

- The endogeneity of the policy rate in Korea is confirmed as the existence of a strong bidirectional causality between output and interest rate (see Table 1).
- Also, The Bank of Korea tends to raise interest rate incrementally and in measured pace, while during a crisis period, it tends to cut down interest rate significantly and frequently, to respond to the crisis in a swift manner.
- Therefore, putting policy rate after employment and other variables (output, exchange rate and price) would be appropriate.

Table 1
Granger Causality tests between policy rate and output

	Null Hypothesis	p-value							
		lag=1	2	3	4	5	6	7	8
1982.1/4~ 2012.4/4	Policy rate ↛ GDP	.01	.00	.01	.01	.06	.13	.10	.19
	GDP ↛ Policy rate	.21	.01	.00	.00	.00	.13	.01	.00
1999.1/4~ 2012.4/4	Policy rate ↛ GDP	.01	.01	.01	.06	.22	.42	.17	.57
	GDP ↛ Policy rate	.92	.00	.00	.00	.00	.00	.00	.00
1982.1/4~ 2012.4/4	Change in policy rate ↛ Cyclical comp of GDP	.13	.36	.46	.32	.41	.40	.76	.71
	Cyclical comp of GDP ↛ Change in policy rate	.00	.00	.00	.00	.00	.00	.00	.00
1999.1/4~ 2012.4/4	Change in policy rate ↛ Cyclical comp of GDP	.42	.56	.62	.74	.58	.38	.59	.63
	Cyclical comp of GDP ↛ Change in policy rate	.46	.00	.00	.00	.00	.00	.00	.00
1982.1/4~ 2012.4/4	Change in policy rate ↛ Change in GDP	.03	.01	.01	.03	.09	.11	.10	.21
	Change in GDP ↛ Change in policy rate	.00	.00	.00	.01	.02	.04	.04	.01
1999.1/4~ 2012.4/4	Change in policy rate ↛ Change in GDP	.00	.01	.06	.22	.42	.07	.23	.34
	Change in GDP ↛ Change in policy rate	.00	.00	.00	.00	.00	.00	.00	.00

- As the VAR model is a reduced model, when the error term of each variable in the VAR model is correlated, the pure impulse of each variable cannot be identified.
- Therefore, interpretation of impulse responses created by one unit of innovations of the residuals becomes unclear.
- To solve this problem, this paper uses the Cholesky decomposition so that all the error terms are orthogonalized and the impulse responses are then derived from the orthogonalized error terms.

- Cholesky decomposition is a way of identifying error terms by constraining a variable that first variable is “more” exogenous, with a lower triangular matrix.
- This type of reduced VAR model is termed as a *semi-structural VAR model*. In this way, the impulse response function can be interpreted as a pure and uncorrelated innovation of each error term.

- The next issue considered is stationarity.
- In modelling, when variables have unit roots, implying that they are non-stationary series, differencing of series is needed to make them stationary before estimation as the relationship would be spurious otherwise.
- Differencing, however, results in the loss of information.

- Although variables are non-stationary, the relationship among variables can be cointegrated, that is, the linear combination of non-stationary variables can be stationary.
- This cointegrating relationship can precisely recover the loss of information by differencing.
- From the cointegration relationship, the error correction model can be derived (Engle and Granger, 1987 and Johansen, 1988).

II.2 Estimating the Relationship between Interest Rates and Employment: Initial Investigation

- Before carrying out the analysis using the VAR model, we explore the following potential issues: (i) the interaction between interest rate changes and cyclical component of employment;
- (ii) the relationship among business cycle, interest rate and employment; and
- (iii) the asymmetric effect of interest rate policy on cyclical employment.

(i) *The Interaction between Interest Rate Changes and Cyclical Employment*

- Theoretically, policy rate changes by central banks are more likely to affect the cyclical component of employment rather than the structural employment or total employment.
- Employment is divided into a trend and a cyclical component using the H-P filter. Comparing the effect of the policy rate on the change of total employment and on the cyclical employment, the Granger causality tests indicated that the policy rate influences manufacturing industry workers only in case of total employment
- while it affects both workers in manufacturing and service industries in case of cyclical employment.

- After the Asian currency crisis period of 1999.1/4~2012.4/4, the policy rate affects wage workers only in case of total employment while it influences both wage and non-wage workers in case of cyclical employment.
- These result support the hypothesis that interest rate policy has a greater impact on cyclical employment than on total employment.

Table 2
Granger Causality Tests between Policy Rate and Cyclical Component of Employment

Period	Null Hypothesis	p-value							
		lag =1	2	3	4	5	6	7	8
<policy rate (difference)>									
1982.1/4~ 2012.4/4	Rate ↛ total empl	.96	.95	.66	.70	.85	.90	.95	.95
	Total empl ↛ rate	.00	.00	.00	.00	.00	.00	.00	.00
1982.1/4~ 1997.4/4	Rate ↛ total empl	.23	.16	.29	.57	.68	.78	.83	.21
	Total empl ↛ rate	.52	.19	.19	.37	.60	.62	.75	.76
1999.1/4~ 2012.4/4	Rate ↛ total empl	.00	.01	.05	.10	.14	.37	.19	.28
	Total empl ↛ rate	.75	.51	.54	.88	.88	.96	1.0	1.0
1982.1/4~ 2012.4/4	Rate ↛ wage empl	.42	.81	.61	.42	.10	.15	.29	.18
	Wage empl ↛ rate	.00	.00	.00	.00	.00	.00	.00	.00
1982.1/4~ 1997.4/4	Rate ↛ wage empl	.10	.39	.29	.45	.32	.46	.63	.71
	Wage empl ↛ rate	.37	.36	.43	.76	.85	.90	.87	.94
1999.1/4~ 2012.4/4	Rate ↛ wage empl	.00	.00	.01	.03	.04	.35	.49	.61
	Wage empl ↛ rate	.90	.33	.49	.56	.61	.76	.91	.95
1982.1/4~ 2012.4/4	Rate ↛ non-wage empl	.38	.31	.32	.57	.51	.55	.91	.45
	Non-wage empl ↛ rate	.86	.09	.17	.12	.03	.06	.13	.10
1982.1/4~ 1997.4/4	Rate ↛ non-wage empl	.91	.30	.31	.63	.67	.73	.93	.31
	Non-wage empl ↛ rate	.98	.05	.03	.03	.07	.09	.16	.11
1999.1/4~ 2012.4/4	Rate ↛ non-wage empl	.04	.20	.31	.40	.54	.69	.45	.58
	Non-wage empl ↛ rate	.21	.50	.45	.88	.86	.95	.98	.99

Table 2
Granger Causality Tests between Policy Rate and Cyclical Component of Employment *(continuation)*

1982.1/4~ 2012.4/4	Rate ↛ manu empl	.05	.23	.02	.03	.02	.04	.06	.03
	Manu empl ↛ rate	.00	.00	.00	.00	.00	.00	.00	.00
1982.1/4~ 1997.4/4	Rate ↛ manu empl	.63	.82	.34	.38	.35	.47	.58	.36
	Manu empl ↛ rate	.26	.34	.40	.68	.63	.67	.76	.76
1999.1/4~ 2012.4/4	Rate ↛ manu empl	.01	.16	.07	.09	.10	.19	.22	.19
	Manu empl ↛ rate	.38	.85	.28	.52	.58	.70	.81	.88
1982.1/4~ 2012.4/4	Rate ↛ service empl	.30	.39	.55	.48	.55	.67	.41	.45
	Service empl ↛ rate	.65	.81	.94	.95	.95	.98	.99	.71
1982.1/4~ 1997.4/4	Rate ↛ service empl	.33	.56	.67	.91	.95	.76	.86	.78
	Service empl ↛ rate	.14	.32	.22	.39	.56	.56	.71	.71
1999.1/4~ 2012.4/4	Rate ↛ service empl	.73	.25	.11	.12	.20	.15	.02	.00
	Service empl ↛ rate	.65	.66	.92	.95	.88	.95	.92	.98

Shaded area implies p-value is lower than 5%.

(ii) Relationship among Business Cycle, Interest Rate and Employment

- The relationship among the cyclical component of business coincidence index, policy rate and cyclical component of employment using monthly data spanning 1982.7~2012.12 is tested.
- Firstly, the cross correlation coefficient between the policy rate and business coincidence index is the largest at 0.25 when the business coincidence index is leading the policy rate by 6 to 7 months.

- This means that the response of the central bank using policy rate was roughly 2 quarters after the business fluctuations.
- On the other hand, after the Asian currency crisis, the largest cross correlation coefficient is 0.51, twice as large as for the whole period, when the business coincidence index is leading policy rate by 2~4 months.

Table 3
Cross-correlation Coefficients

<Policy rate and cyclical component of business coincidence index>							
lags i	rate, cyclical com(-i)	lags i	rate, cyclical com(i)	lags i	rate, cyclical com(-i)	lags i	rate, cyclical com(i)
Total period (1982.7~2012.12)				After crisis (1999.1~2012.12)			
0	.0835	0	.0835	0	.4213	0	.4213
-1	.1339	+1	.0315	-1	.4814	+1	.3750
-2	.1738	+2	-.0164	-2	.5111	+2	.3105
-3	.2036	+3	-.0550	-3	.5157	+3	.2380
-4	.2257	+4	-.0824	-4	.5056	+4	.1679
-5	.2394	+5	-.1038	-5	.4885	+5	.1098
-6	.2470	+6	-.1178	-6	.4644	+6	.0649
-7	.2466	+7	-.1244	-7	.4315	+7	.0275
-8	.2395	+8	-.1233	-8	.3886	+8	.0003
-9	.2300	+9	-.1163	-9	.3399	+9	-.0225
<Cyclical components of employment and business coincidence index>							
lags i	employment, cyclical com(-i)	lags i	employment, cyclical com(i)	lags i	employment, cyclical com(-i)	lags i	employment, cyclical com(i)
Total period (1982.7~2012.12)				After crisis (1999.1~2012.12)			
0	.6238	0	.6238	0	.5548	0	.5548
-1	.6157	+1	.6108	-1	.5038	+1	.5074
-2	.5951	+2	.5739	-2	.4242	+2	.4422
-3	.5599	+3	.5139	-3	.3373	+3	.3640

- This implies that The Bank of Korea responded to the business cycle much more swiftly and aggressively using interest rate policy after the Asian currency crisis.
- The positive cross correlation coefficient between the business cycle and interest rate implies that the central bank raised policy rate to cool down inflation pressure during the expansionary phase of the business cycle.

- Secondly, it turns out that the cyclical component of the business coincidence index and cyclical component of employment move together without time lags with the cross correlation coefficient being 0.62 for the whole period and 0.55 for the period after the Asian currency crisis.
- Business coincidence composite index includes non-farm employment.

- Thirdly, in case of the relationship between interest rate and the cyclical component of employment, interest rate leads employment by 7~9 months with the cross correlation coefficient of 0.25 during the whole period,

- while interest rate leads 3~5 months with the cross correlation coefficient of 0.22 after the currency crisis.

Table 3
Cross-correlation Coefficients *(continuation)*

<Policy rate and cyclical component of employment >							
lags i	rate, empl (-i)	lags i	rate, empl (i)	lags i	rate, empl (-i)	lags i	rate, empl (i)
Total period (1982.7~2012.12)				After crisis (1999.1~2012.12)			
0	.0634	0	.0634	0	.0959	0	.0959
-1	.0179	+1	.1083	-1	.1066	+1	.1590
-2	-.0188	+2	.1393	-2	.1307	+2	.1955
-3	-.0593	+3	.1678	-3	.1391	+3	.2119
-4	-.0912	+4	.2019	-4	.1396	+4	.2177
-5	-.1153	+5	.2282	-5	.1381	+5	.2159
-6	-.1373	+6	.2460	-6	.1315	+6	.2062
-7	-.1606	+7	.2518	-7	.1387	+7	.1969
-8	-.1761	+8	.2536	-8	.1508	+8	.1800
-9	-.2003	+9	.2508	-9	.1500	+9	.1560
-10	-.2163	+10	.2450	-10	.1487	+10	.1285
-11	-.2229	+11	.2412	-11	.1361	+11	.0985
-12	-.2145	+12	.2298	-12	.1252	+12	.0676
-13	-.2123	+13	.2109	-13	.1098	+13	.0357

Shaded area implies p-value is lower than 5%.

- This result can be interpreted as follows: when the economy starts to expand, employment begins to increase and central bank reacts by raising the policy rate after 1~2 quarters.
- Subsequently, expansion of employment decelerates after 2~3 quarters following the rise in interest rates.
- As a result, the cross correlations coefficient between employment and interest rates is positive, albeit magnitude is small.

- Finally, as central bank's interest rate policy is implemented in such a way to achieve the price target, the study also analyses the relationship between the cyclical component of the business coincidence index and inflation rate (CPI, year-over-year).
- We find that the business cycle leads the inflation rate by 9~10 months for the whole period and by 6~8 months for the period after the currency crisis.
- The magnitude of cross-correlation is 0.31 and 0.53 respectively, implying that the relationship between the business cycle and the inflation rate became stronger after the currency crisis.

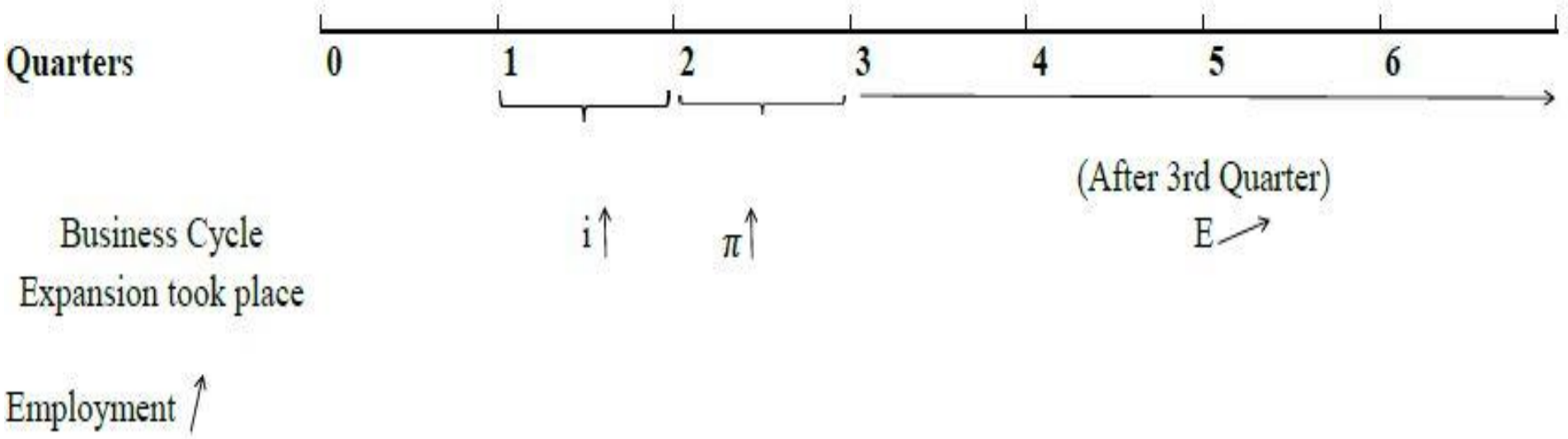
Table 4
Cross-correlation Coefficients between CPI Rate and Business Coincidence Index

<CPI rate and cyclical component of business coincidence index >							
lags i	price, cyclical com(-i)	lags i	price, cyclical com(i)	lags i	price, cyclical com(-i)	lags i	price, cyclical com(i)
Total period (1982.7~2012.12)				After crisis (1999.1~2012.12)			
0	-.0492	0	-.0492	0	.0719	0	.0719
-1	.0027	+1	.-0964	-1	.1663	+1	-.0413
-2	.0546	+2	-.1339	-2	.2515	+2	-.1417
-3	.1048	+3	-.1632	-3	.3337	+3	-.2325
-4	.1543	+4	-.1849	-4	.4130	+4	-.3213
-5	.2000	+5	-.2001	-5	.4822	+5	-.4033
-6	.2389	+6	-.2031	-6	.5230	+6	-.4621
-7	.2670	+7	-.1944	-7	.5260	+7	-.4883
-8	.2880	+8	-.1780	-8	.5201	+8	-.4791
-9	.3009	+9	-.1585	-9	.4989	+9	-.4496
-10	.3055	+10	.-1378	-10	.4756	+10	-.4098
-11	.2972	+11	-.1194	-11	.4399	+11	-.3578

Shaded area implies p-value is lower than 5%.

- The sequence can be analyzed as follows: when the business cycle moves in the expansionary stage, employment expands, price then rises after 2~3 quarters after the expansion in employment prompting the central bank to preemptively raise the policy rate approximately 1 quarter before price increases.
- Thus, employment expansion is affected 1~2 quarters after the implementation of a higher policy rate.
- This finding shows that interest rate policy by the central bank to stabilize the business cycle has a significant impact on employment.

Relationship among business cycle, interest rate, inflation and employment



(iii) Asymmetric Effect of Interest Rate Policy on Cyclical Employment

- Monetary policy is generally considered to be effective in cooling an over-heated economy but its potency is limited for boosting a depressed economy.
- In other words, the effect of monetary policy appears asymmetric between contractionary policy and expansionary policy.

- In order to analyze the asymmetric effect of monetary policy on employment, monetary policy is divided into expansionary and contractionary periods.

- Using Korean data spanning 1982.1/4~2012.4/4, causality tests reveal that policy rate affects cyclical employment during the contractionary monetary policy period slightly more than the expansionary monetary policy period.

→ This topic is further explored in next chapter.

- It is also found that cyclical employment affects the policy rate to a large degree for both contraction and expansion periods.

- This implies that there exists a feedback channel between interest rate and employment (cyclical component) and it can therefore be said that The Bank of Korea takes into consideration employment in conducting monetary policy.

Table 5
Comparisons between Expansion and Contraction Periods

Period	Null Hypothesis	p-value							
		Lag =1	2	3	4	5	6	7	8
<Policy rate (differenced; expansionary monetary policy period)>									
1982.1/4~ 2012.4/4	Rate ↛ Employment	.00	.09	.30	.52	.83	.83	.92	.85
	Employment ↛ rate	.41	.00	.00	.00	.00	.00	.00	.00
1982.1/4~ 1997.4/4	Rate ↛ Employment	.52	.65	.81	.93	.97	.99	1.00	.35
	Employment ↛ rate	.73	.73	.90	.96	.85	.85	.81	.67
1998.1/4~ 2012.4/4	Rate ↛ Employment	.00	.01	.00	.00	.00	.00	.00	.00
	Employment ↛ rate	.05	.19	.02	.06	.03	.01	.06	.01
<Policy rate (differenced; contractionary monetary policy period)>									
1982.1/4~ 2012.4/4	Rate ↛ Employment	.01	.07	.11	.12	.24	.36	.50	.15
	Employment ↛ rate	.02	.02	.05	.06	.04	.02	.05	.05
1982.1/4~ 1997.4/4	Rate ↛ Employment	.18	.10	.22	.45	.53	.55	.37	.05
	Employment ↛ rate	.25	.08	.08	.14	.58	.63	.60	.70
1998.1/4~ 2012.4/4	Rate ↛ Employment	.00	.01	.05	.07	.02	.01	.00	.01
	Employment ↛ rate	.66	.00	.00	.00	.00	.00	.00	.00

Shaded area implies p-value is lower than 5%.

III. Empirical Model and Result

- **VAR Model**
  - ❑ Consists of variables, with the sequencing:

    exchange rate, aggregate demand, price, employment, policy rate.
  - ❑ Oil price is included as an exogenous variable.
  - ❑ The reason the price variable is inserted after the aggregate demand variable is that the time lag of price (3~8 quarters) is usually longer than the time lag for aggregate demand (2~6 quarters) in the transmission effect of monetary policy (The BOK, 2005).
  - ❑ Every variable except interest rate variable is deseasonalized and logged.

- The data set comprises 1982.1/4~2012.4/4 for the whole period and 1998.1/4~2012.4/4 for the aftermath of Asian currency crisis period.
- Before estimating VAR model, unit root tests and cointegration tests are conducted.
- The tests show that all the variables have unit roots but the 1st differenced variables appear to be stationary.
- There does not exist any cointegrating relation among endogenous variables.
- Therefore, all endogenous and exogenous variables included in the VAR model are 1st differenced.
- The optimal lag of the model is 2 (two), based on the Akaike Information Criterion (AIC) and Schwartz Information Criterion (SIC) with the exogenous variable, oil price, at 2 (two) as well.

Table 6
Result of Unit Root Tests

Variables	Level		Difference	
	t-statistic	p-value	t-statistic	p-value
Exchange rate (ex)	-3.13	0.11	-8.82	.00
Aggregate demand (y)	-1.72	0.73	-10.81	.00
Price (p)	-0.36	0.99	-7.13	.00
Total employment (e^t)	-1.68	0.76	-9.04	.00
Wage workers (e^w)	-2.18	0.50	-7.05	.00
Non-wage workers (e^{nw})	-0.98	0.94	-9.51	.00
Manufacturing sector employment (e^m)	-2.75	0.22	-5.55	.00
Service sector employment (e^s)	-0.38	0.99	-5.02	.00
Interest rate (r)	-2.65	0.26	-9.14	.00
Oil price (oil)	-1.73	0.73	-7.58	.00

- **Summary Result of Impulse Response**

	Interest Rate*	Total Period (1982.1/4~2012.4/4)	After Asian Currency Crisis (1998.1/4~2012.4/4)
Total Employment	0	-0.2% (after 2 quarters)	-0.4% (after 2 quarters)
	+	-0.2% (after 2 quarters)	-0.4% (after 2 quarters)
	–	Insignificant	+0.2% (after 2 quarters)
Wage workers	0	-0.4% (after 2 quarters)	-0.8% (after 2 quarters)
	+	-0.4% (after 2 quarters)	-0.6% (after 2 quarters)
	–	+0.25% (after 3 quarters)	+0.5% (after 2 quarters)
Non-wage workers	0	Insignificant	Insignificant
	+	Insignificant	Insignificant
	–	Insignificant	Insignificant

- **Summary Result of Impulse Response *(continuation)***

	Interest Rate*	Total Period (1982.1/4~2012.4/4)	After Asian Currency Crisis (1998.1/4~2012.4/4)
Manufacturing Sector employment	0	-0.6% (after 2 quarters)	-0.8% (after 2 quarters)
	+	-0.6% (after 2 quarters)	-0.7% (after 2 quarters)
	–	+0.4% (after 3 quarters)	+0.6% (after 2 quarters)
Service Sector employment	0	Insignificant	Insignificant
	+	Insignificant	Insignificant
	–	Insignificant	Insignificant
Cyclical component of employment	0	Insignificant	-0.4% (after 2 quarters)
	+	-0.4% (after 4 quarters)	-0.6% (after 3 quarters)
	–	Insignificant	Insignificant

Note:

* 0 refers to positive shocks of interest rate; + refers to positive shocks of interest rate on the rise (during the contraction periods); and – refers to positive shocks of interest rate on the decline (during the expansion periods).

- The reason that wage workers and employment in manufacturing sector responded significantly in contrast to non-wage workers and employment in the service sector is that there are more wage workers employed in the manufacturing sector than in the service sector.
- In addition, when exports contract during exchange rate appreciation as a result of interest rate increase, the effect of reduced employment is primarily realized through the manufacturing sector that produces tradable goods.

- On the other hand, the contraction effect of interest rate rise on employment in the service sector would be cancelled out by the expansion effect on employment in the service sector that produces non-tradable goods thanks to exchange rate appreciation.
- That is why the effect of interest rate on the employment of the service sector appeared insignificant.
- In this regard, one may need to ensure that the exchange rate does not appreciate too much in case of a policy rate hike for employment stability.

IV. Summary and Policy Implications

- ❑ BOK's interest rate policy is effective for stabilizing and expanding employment, directly contributing to inclusive growth.
- ❑ In particular, this effect became larger and quicker after the Asian currency crisis.
  - This is consistent with the fact that the influence of interest rate has become stronger since it has been used as a primary policy tool after the adoption of inflation targeting by The Bank of Korea in early 1998.
- ❑ Interest rate policy has a bigger impact on the cyclical component of employment than on total employment particularly during the period of cooling down,

- which supports the view that monetary policy is most effective for fine-tuning the economy compared to changing the trend of economic growth and employment.

❑ Interest rate impact on employment is realized through wage workers and manufacturing sector employment.

❑ Shrinking effect of employment as a result of increasing interest rate is estimated to be bigger than the expanding effect of employment by the lowering of interest rate.

- The asymmetric effect of interest rates on employment implies that it is essential to reduce the volatility of the policy rate and maintain interest rate at a long-term neutral level for a prolonged period in order to stabilize and expand employment.

- In fact, with references to the Fed mandates on price stability and maintaining long-term interest rate at appropriate level, it is necessary to manage long-term nominal interest rate at low and neutral levels.

- In this regard, the Fed mandates support our policy implications.

- In any case, price stability is a prerequisite for employment stability, higher employment and inclusive growth.

- It is necessary to ensure exchange rate does not appreciate too much, to avoid its over-shooting when interest rates are on the rise in order to reduce the volatility of manufacturing sector employment.
- A rise in interest rates will result in exchange rate appreciation and both variables would subsequently reinforce one another to adversely impact manufacturing sector employment. (But cancelled out in service sector)
- Although these policy implications are drawn from the case of the Korean economy, they can most likely be also applicable for most SEACEN economies as these economies are export-oriented and where the asymmetric effect of monetary policy is a well-known fact.

The **SEACEN** Centre

Thank You

Our **VISION**

To be the Regional Learning Hub for Central Banks in the Asia-Pacific Region.

Our **MISSION**

To build capacity in central banking and foster networking and collaboration.