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Defense Spending and Income Inequality: Evidence from Selected Asian Countries

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Abstract

This paper examines the causality between defense spending and income inequality in selected Asian countries namely Malaysia, Indonesia, Singapore, Philippines, India and South Korea for the period 1970-2005. Autoregressive Distributed Lag (ARDL) bounds testing procedure is employed to (1) analyze the impact of defense spending on income inequality and (2) the impact of income inequality on defense spending as well. Interestingly our results indicate one way causality running from defense spending to income inequality only for the case of Malaysia and bidirectional causality for the case of Singapore. As for the remaining countries, no meaningful relationship could be detected and it can be seen as sign of good governance in these countries.

Keywords: Defense spending, Income inequality, Asian, Bounds testing

1. Introduction

Causality relationship between defense spending and income inequality has been subject of interest for many parties; however the lack of availability of information on its statistics and data has been a stumbling block to more researches being conducted. Out of the few studies that have been done, results are often mixed. Ali (2007) made one of the early attempts on a global scale, to identify the relationship between defense spending and income inequality. They treat economic growth as a control variable rather than a dependent variable and emphasize on the impact of defense spending on income inequality only. In this study we went a step ahead by treating income inequality, as both regressor (control variable) and regresand (dependant).

Theoretically it is believed that there are number of ways by which defense spending may be cointegrated with income inequality: (1) Any increase in defense spending could be at the expense of public spending on social programs such as health and education which in turn will have an equalizing effect, (2) The taxes required to support military spending may fall disproportionately on the middle classes; if so, post-tax income inequality might be at a risk of increasing. (3) High levels of military spending may reflect the use of violence as a means of social control, notably against trade unions and other egalitarian social forces thus, it is not surprising to witness that higher military spending means more societal control and a sacrifice of egalitarian values.

On the other hand, looking at it from another perspective (4) military experience may cut in the other direction. The military absorbs low-skilled labor, which may raise wages for the young and unskilled. Mobilization for war may require equalizing concession to labor's interests. In general, the more equipment-intensive defense spending, the more we expect the income inequality-increasing effects to dominate; the more labor-intensive the military and home grown the military production, the more we might expect to find inequality-reduction effects in the data. It can even be (5) no-cointegration at all, when there are good governance, respective governments carefully planning their policies and budget, so that defense spending would not stand in the way of spending on other important aspects, such as education, health, public amenities etc. Caputo (1975) was one of the earlier studies on public policy implications of military and welfare expenditures. The subject became more popular and much more researches were conducted, however most of these researches were centered around defense spending and economic growth, such as to name a few, Hassan et al. (2003), Al-Yousif (2002), Shieh et al. (2002), and Kollias et al (2004a and 2004b). As for the defense spending and income inequality, as mentioned above, Ali (2007) was one of the few papers other than Boswell and Dixon (1990), Auvinen and Nafziger (1999), and Jorgensen (2005)

2. Trend of Defense Spending and Income Inequality in Asian Countries

Defense spending and income inequality has been an important component in economy. Figure 1 displays the trend of defense spending in six selected Asian countries; Indonesia, Malaysia, Philippines, Singapore, India and South Korea. It can clearly be seen that, the volatility is quite high for almost all the selected countries for the period 1970 to 1988, however, it stabilizes after 1988.

As for Figure 2, Singapore and South Korea show declining pattern in income inequality (better income distribution) for the period 1972 to 1997, while Malaysia, quite the contrary, shows an increasing (worsening income distribution) for the period 1982 to 1990. While for the case of Indonesia, there are fluctuations in income inequality pattern from 1974 to 1990 and declining after that and finally, the Philippines show an increasing trend.

Figure 3 show the defense spending as a percentage of gross domestic products in these six countries for three different times, albeit, 1970, 1990 and 2006. As can bee seen for all three different point of time, Singapore is the highest spender in terms of ratio to GDP. Malaysia was second highest in 1970, dropped to fourth among these six countries in 1990 and remained fourth in 2006 as well. Indonesia ranked fifth in all three points of time, similar to the Philippines who ranked sixth in all. South Korea ranked third in 1970, climbed to second in 1990 and dropped back to third in 2006.And finally India ranked fourth in 170, climbed to third in 1990 and remained there for 2006.

3. Review of Related Literature

Ali (2007) examines the effect of military spending on income inequality for the period 1987-1997, controlling for the size of armed forces, GDP growth, per capita income and other possible determinants. Their hypothesis is that as per capita defense spending increases, income inequality increase, controlling for the size of armed forces, and for regional and economic variables. They found consistent estimates that there is positive effect of defense spending on income inequality and it is robust across variable definitions and model specifications. Given the close relationship, this result suggests that an increase in the defense spending's of a country will worsen the income distribution (increase the income inequality). The same results were shared by Jorgensen (2005), Auvinen and Nafziger (1999), Auvinen and Nafziger (2002), Jayadev and Bowles (2006) but was contrary to Henderson et al. (2008)

Auvinen and Nafziger (1999) explained that there is a high correlation between high ratio of defense spendings to income and high income inequality in 124 less developed countries (LDCs) for the period 1980-1995, using various causality regressions, and ultimately this can turn into source of humanitarian emergency, a view that was supported by their following paper, Auvinen and Nafziger (2002) in their study on developing countries. Jayadev and Bowles (2006), in their study on participation in Guard Labor in the United States based on empirical data from even 1890s, using classical model on power and growth, claimed that these people could have been employed in other productive sectors, and by serving in the less productive sector (Guard Labor), it contributed to a higher income inequality (worsening income distribution). However the finding of Henderson et al. (2008) was on the contrary, in their study on the transition countries of Eastern Europe and Central Asia, they found that these countries during their transition, with a cut budget on their defense spending still turned out worse off, with a higher income inequality. They then suggested that there could be elements of hidden income inequality in these countries in their past history.

4. Methodology

4.1 ARDL Approach to Causality Test

In order to test for causality between defense spending and economic growth we utilized the autoregressive distributed lag model (ARDL) popularize by Pesaran et al. (2001). The ARDL has numerous advantages. Firstly, the ARDL approach is able to examine the presence of short run as well as long run relationship between the independent variables and the dependent variable. Secondly, the ARDL model takes a sufficient numbers of lags to capture the data generating process in a general to specific modeling framework (Laurenceson and Chai, 2003). Apart from that, unrestricted error-correction model (UECM) is likely to have better statistical properties than the two-step Engle-Granger method because, unlike the Engle-Granger method, the UECM does not push the short –run dynamics into the residual term (Banerjee et al., 1998). Finally, the ARDL approach provides robust result in a small sample size. Since the sample size of our study is small, this provides more motivation for this study to adopt this model.

The ARDL unrestricted error correction model (UECM) is shown below:

$$\Delta LDS_t = \alpha_0 + \alpha_1 LDS_{t-1} + \alpha_2 LI_{t-1} + \sum_{i=1}^{m} \alpha_{3,i} \Delta LDS_{t-i} + \sum_{i=1}^{m} \alpha_{4,i} \Delta LI_{t-i} + \varepsilon_t \quad (1)$$

$$\Delta LI_t = \beta_0 + \beta_1 LI_{t-1} + \beta_2 LDS_{t-1} + \sum_{i=1}^{m} \beta_{3,i} \Delta LDS_{t-i} + \sum_{i=1}^{m} \beta_{4,i} \Delta LI_{t-i} + \mu_t \quad (2)$$

whereby DS is the ratio of defense spending to GDP, I is income inequality, Δ is the first difference operator, L denote variables in logarithm and ε_t and μ_t are serially independent random errors.

To examine the long- run relationship, the bound cointegration test based on *F*-statistic taken from Narayan and Narayan, (2005) will be used. The null hypothesis for no cointegration among the variables in Eq. (1) is ($Ho : \alpha_1 = \alpha_2 = 0$) denoted by F_{MILEX} against the alternative ($H_1 : \alpha_1 \neq \alpha_2 \neq 0$). Similarly, for Eq. (2) the null hypothesis for no long-run meaningful relationship among the variables is ($Ho : \beta_1 = \beta_2 = 0$) as denoted by F_I against the alternative ($H_1 : \beta_1 \neq \beta_2 \neq 0$).

The two asymptotic critical values bound provide a test for cointegration when the independent variables are *I(d)* (where $0 \leq d \leq 1$): a lower value assuming the regressors are *I(0)*, and an upper value assuming purely *I(1)* regressors. If the test statistic exceed the upper critical value, we can conclude that a long – run relationship exist regardless of whether the underlying order of integration of variable are zero or one. If the test statistics fall below the lower critical values we cannot reject the null hypothesis of no cointegration. However, if the statistic fall between these two bound, inference would be inconclusive.

4.2 Description and sources of data

The data used in this study are annual data on defense spending and income inequality for the selected Asian countries. The countries are Malaysia, Indonesia, Philippine, Singapore, India and Korea. DS is measure by the defense spending as a percentage of GDP. This data was obtained from various issues of SIPRI Yearbook and SIPRI online database. Meanwhile the data for the income inequality, for the corresponding period was obtained from University of Texas, which is estimates of gross household income inequality, computed from a regression relationship between the Deininger and Squire Inequality measures and the UTIP-UNIDO pay inequality measures. All the data used in the study were transformed into logarithm.

5. Empirical results

We tested for the order of integration for defense spending and income inequality before proceeding to testing for cointegration by using the ARDL bounds testing procedure. Table 1(A and B) show the results of the unit root test for the test of the order of integration of the economic time series under investigation. Clearly the augmented Dickey-Fuller test (Dickey and Fuller, 1981) statistics indicate that both the defense spending and income inequality economic series in selected Asian countries are stationary after first differencing (*I*(1)) thus our relevant critical values are the upper bound of purely *I*(1) regressors. These results are tabulated in Table 2 (Panel A and Panel B). Whereby in Panel A, the dependent variable is income inequality and in Panel B, the dependent variable is defense spending. It can be summarized that there seems to be unidirectional causality from defense spending to income inequality in Malaysia while for the case of Singapore there seems to be bidirectional causality. As for the other countries, the null hypothesis of no cointegration cannot be rejected in all the cases (Panel A and Panel B); these results suggest that there are no long-run relationships between defense spending and income inequality in these countries namely, India, South Korea, Thailand and Philippines.

Table 3 Panel A and Panel B) display the long run coefficients results. For both Malaysia and Singapore case, it is positively significant; any increase in defense spending will increase income inequality (worsening income distribution) as for panel B (defense spending as a dependant variable) Singapore's income inequality is also positively related with defense spending.

Figure 4 display the results of the impulse response of counties, based on VECM for Malaysia and Singapore, while for the remaining countries based on VAR, and again the results are robust. It clearly shows that any shock in the defense spending does not constitute any shocks to income inequality *vice versa* for India, South Korea, Thailand and Philippines. On the other hand, any shock to defense spending does causes shock to income inequality for Malaysia and for Singapore it is both way.

As for variance decomposition, the results shown in Table 4 to Table 9 are similar to prior finding whereby showing the same pattern of results, there are no meaningful relationship between these variables (defense spending and income inequality) for India, South Korea, Thailand and Philippines (in fact percentage changes that contributed to the other variable is too small and it stabilizes after a few periods). While for Malaysia and Singapore the results are similar to ARDL and IRF. These results are very consistent in nature.

6. Conclusion

In this study the autoregressive distributed lag (ARDL) bounds testing procedure was employed to investigate the long-run relationship between defense spending and income inequality in six selected Asian countries, namely Malaysia, Singapore, Thailand, Philippine, South Korea and India. A bivariate analysis on the impact of income inequality on defense spending, *vice versa* the impact of defense spending on income inequality was conducted. The sample period was 1970 – 2005 and the data was annual. All the data went through log-log transformation so that the estimates will be less sensitive to outliers or influential observations and also in order to reduce the data range.

The results suggest that all the variables chosen are $I(1)$ or in other words they are non-stationary variables and achieved stationarity only after first differencing. The cointegration analysis using the ARDL bounds testing approach clearly indicates that only in the case of Malaysia and Singapore, the military spending are cointegrated with income inequality. Though the results are interesting, not much comparison could be made because not many researches done on this issue, even the few researches made, they normally treat income inequality as the dependant variable only as in the case of Ali (2007).

However our results for the case of Malaysia and Singapore are concurrent with his finding, whereby any increase in Defense spending will worsen of income distribution (higher income inequality. as also supported by Caputo (1975) who explained that there is a trade off between defense and welfare expenditure. Another paper with similar result is of Jayadev and Bowles (2006), however their argument is different, they claimed that being in the lower productivity sector (Guard Labor) deprives the nation of their contribution in other higher productivity sectors, thus worsening income distribution resulting higher income inequality. And as for the remaining countries, no trace of cointegration among these variables can be concluded as a sign of good governance and good policy making, whereby the decisions of defense spending is independent and does not have any whatsoever impact on income distribution.

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Table 1A. Results of Unit Root Test for Series in Level

Asian	LI		LDS	
	ADF *t*-statistic	Lag	ADF *t*-statistic	Lag
Indonesia	-2.485	0	-2.593	2
	[0.33]		[0.28]	
Malaysia	-2.174	1	-2.360	0
	[0.48]		[0.39]	
Philippine	-2.971	0	-1.887	1
	[0.15]		[0.63]	
Singapore	-1.835	1	-3.309	1
	[0.66]		[0.08]	
India	-1.651	0	-1.972	0
	[0.75]		[0.59]	
Korea	-1.754	0	-0.981	0
	[0.70]		[0.93]	

Notes: Asterisk (*) denotes statistically significant at 5% level.

Table 1B. Results of Unit Root Test for Series in First Difference

Asian	LI		LDS	
	ADF *t*-statistic	Lag	ADF *t*-statistic	Lag
Indonesia	-5.874 [0.00]*	0	-5.021 [0.00]*	0
Malaysia	-3.808 [0.00]*	0	-5.097 [0.00]*	0
Philippine	-7.474 [0.00]*	0	-4.140 [0.00]*	1
Singapore	-3.912 [0.00]*	1	-4.466 [0.00]*	1
India	-5.211 [0.00]*	0	-4.833 [0.00]*	0
Korea	-7.399 [0.00]*	0	-5.941 [0.00]*	0

Notes: Asterisk (*) denotes statistically significant at 5% level

Table 2. Bounds Test for Cointegration Analysis Based on the Equation 1 and Equation 2

Panel A

Dependent variable LI, Independent variable LDS

n	Critical value	Lower Bound Value	Upper Bound Value
30	5%	4.090	4.663
35	5%	3.957	4.530

Computed *F*- statistic

Countries	*F*-Statistic
Indonesia	3.2073
Malaysia	8.1759*
Philippines	1.2587
Singapore	4.5901*
India	3.2941
Korea	0.6370

Panel B

Dependent variable LDS, Independent variable LI

n	Critical value	Lower Bound Value	Upper Bound Value
30	5%	4.090	4.663
35	5%	3.957	4.530

Computed *F*- statistic

Countries	*F*-Statistic
Indonesia	1.6459
Malaysia	0.4302
Philippines	1.6126
Singapore	5.4879*
India	3.0022
Korea	3.7224

Notes: Asterisk (*) denotes statistically significant at 5% level.

Table 3. Long – run coefficient

Panel A

Dependent : LI / Independent: LDS	Coefficient	*t*-statistic
Malaysia	0.1516*	2.8874
Singapore	0.3299	2.0727

Notes: Asterisk (*) denotes statistically significant at 5% level.

Panel B

Dependent : LDS / Independent: LI	Coefficient	*t*-statistic
Singapore	1.2251*	3.1538

Notes: Asterisk (*) denotes statistically significant at 5% level.

Table 4. Variance Decomposition for Indonesia

Variance Decomposition of LI:				Variance Decomposition of LDS:		
Period	S.E.	LI	LDS	S.E.	LI	LDS
1	0.022925	100	0	0.165022	2.653384	97.34662
		0	0		-6.82756	-6.82756
2	0.027867	99.10883	0.891174	0.227362	7.580501	92.4195
		-5.26673	-5.26673		-11.842	-11.842
3	0.031397	93.88101	6.118991	0.271018	12.07511	87.92489
		-11.0515	-11.0515		-13.9801	-13.9801
4	0.034703	86.87199	13.12801	0.307294	15.82857	84.17143
		-16.2466	-16.2466		-15.456	-15.456
5	0.037922	80.13026	19.86974	0.339722	18.84457	81.15543
		-19.2965	-19.2965		-16.904	-16.904
6	0.041052	74.34026	25.65974	0.369778	21.24321	78.75679
		-20.9493	-20.9493		-18.3616	-18.3616
7	0.044088	69.55419	30.44581	0.398207	23.15797	76.84203
		-21.8963	-21.8963		-19.6217	-19.6217
8	0.047034	65.62939	34.37061	0.425443	24.70219	75.29781
		-22.5405	-22.5405		-20.6567	-20.6567
9	0.049901	62.39588	37.60412	0.451764	25.96374	74.03626
		-23.0639	-23.0639		-21.5038	-21.5038
10	0.052698	59.70614	40.29386	0.477362	27.00834	72.99166
		-23.5083	-23.5083		-22.1952	-22.1952

Notes: Cholesky Ordering: LI LDS, Standard Errors: Monte Carlo (100 repetitions)

Table 5. Variance Decomposition for Malaysia

	Variance Decomposition of LDS:			Variance Decomposition of LI:		
Period	S.E.	LDS	LI	S.E.	LDS	LI
1	0.266557	95.64534	4.354663	0.014783	0	100
2	0.377034	96.01499	3.985006	0.017077	0.273237	99.72676
3	0.44892	89.52627	10.47373	0.018914	11.43213	88.56787
4	0.491782	89.77204	10.22796	0.022343	35.85366	64.14634
5	0.520347	90.43182	9.568181	0.030903	64.65095	35.34905
6	0.541778	90.87705	9.122947	0.040849	77.10891	22.89109
7	0.552736	91.22093	8.779066	0.049864	81.27815	18.72185
8	0.561965	91.49932	8.500684	0.057151	83.53265	16.46735
9	0.573034	91.82453	8.175469	0.062367	85.01956	14.98044
10	0.585868	92.14817	7.85183	0.066048	86.07387	13.92613

Notes: Cholesky Ordering: LI LDS, Standard Errors: Monte Carlo (100 repetitions)

Table 6. Variance Decomposition for Philippines

	Variance Decomposition of LI:			Variance Decomposition of LDS:		
Period	S.E.	LI	LDS	S.E.	LI	LDS
1	0.023289	100	0	0.145828	1.057613	98.94239
		0	0		-4.47486	-4.47486
2	0.026771	99.56198	0.438021	0.217376	0.532303	99.4677
		-3.38495	-3.38495		-4.91326	-4.91326
3	0.028245	97.12752	2.872483	0.254707	3.255674	96.74433
		-5.44155	-5.44155		-8.26713	-8.26713
4	0.0293	93.48713	6.512867	0.278368	9.86498	90.13502
		-8.44007	-8.44007		-12.6839	-12.6839
5	0.030191	90.31968	9.680322	0.295458	16.35462	83.64538
		-11.2921	-11.2921		-15.5529	-15.5529
6	0.030915	88.22972	11.77028	0.307406	20.77633	79.22367
		-12.7343	-12.7343		-17.1077	-17.1077
7	0.031485	87.00087	12.99913	0.315548	23.35761	76.64239
		-13.6331	-13.6331		-18.0559	-18.0559
8	0.031923	86.26725	13.73275	0.321304	24.82582	75.17418
		-14.4606	-14.4606		-18.7374	-18.7374
9	0.032254	85.78099	14.21901	0.3256	25.72254	74.27746
		-15.2145	-15.2145		-19.2824	-19.2824
10	0.032503	85.42064	14.57936	0.328911	26.34074	73.65926
		-15.8594	-15.8594		-19.7411	-19.7411

Notes: Cholesky Ordering: LI LDS, Standard Errors: Monte Carlo (100 repetitions)

Table 7. Variance Decomposition for Singapore

	Variance Decomposition of LI:			Variance Decomposition of LDS:		
Period	S.E.	LI	LDS	S.E.	LI	LDS
1	0.01596	100	0	0.094554	5.824267	94.17573
2	0.031067	98.26474	1.735263	0.128454	31.46932	68.53068
3	0.042983	96.65819	3.341806	0.14217	42.28278	57.71722
4	0.050975	96.7781	3.221896	0.147478	41.43657	58.56343
5	0.056207	97.28511	2.714888	0.148118	41.92341	58.07659
6	0.060201	97.61928	2.380721	0.153195	43.96428	56.03572
7	0.064082	97.77378	2.226215	0.161674	48.69535	51.30465
8	0.068315	97.75849	2.241512	0.16817	52.55435	47.44565
9	0.072621	97.77204	2.227961	0.171954	54.601	45.399
10	0.076588	97.86095	2.139051	0.174805	56.06379	43.93621

Cholesky Ordering: LI LDS

	Variance Decomposition of LI:			Variance Decomposition of LDS:		
Period	S.E.	LI	LDS	S.E.	LI	LDS
1	0.01596	94.17573	5.824267	0.094554	0	100
2	0.031067	87.41166	12.58834	0.128454	17.25636	82.74364
3	0.042983	83.56941	16.43059	0.14217	32.35628	67.64372
4	0.050975	83.60554	16.39446	0.147478	33.89552	66.10448
5	0.056207	84.9227	15.0773	0.148118	34.45745	65.54255
6	0.060201	85.89814	14.10186	0.153195	35.45686	64.54314
7	0.064082	86.19503	13.80497	0.161674	39.16031	60.83969
8	0.068315	86.05097	13.94903	0.16817	43.08837	56.91163
9	0.072621	85.99287	14.00713	0.171954	45.42669	54.57331
10	0.076588	86.15368	13.84632	0.174805	46.93114	53.06886

Notes: Cholesky Ordering: LI LDS, Standard Errors: Monte Carlo (100 repetitions)

Table 8. Variance Decomposition for India

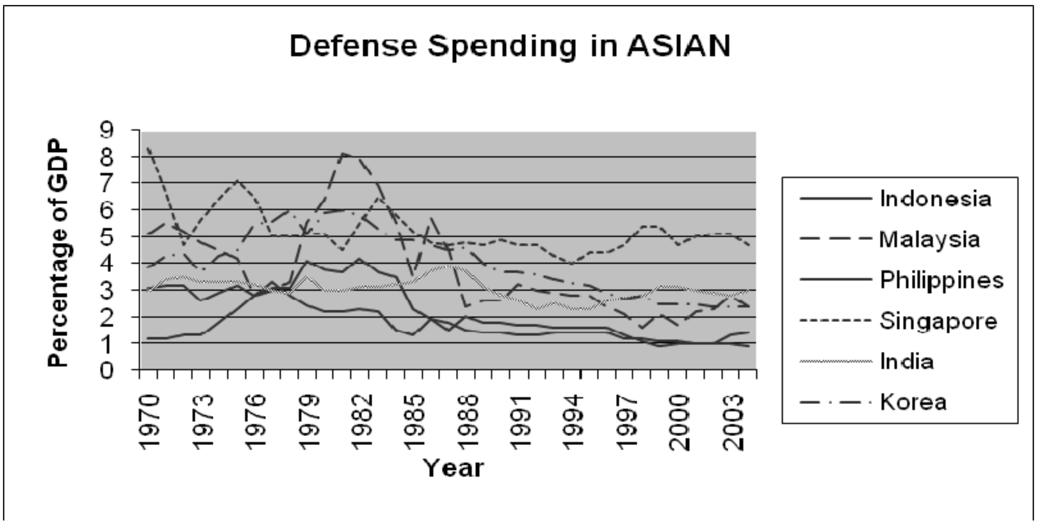
Variance Decomposition of LI:				Variance Decomposition of LDS:		
Period	S.E.	LI	LDS	S.E.	LI	LDS
1	0.01017	100	0	0.075708	15.45394	84.54606
		0	0		-11.3684	-11.3684
2	0.014074	96.44746	3.552535	0.106976	10.31343	89.68657
		-5.45812	-5.45812		-10.7977	-10.7977
3	0.016629	93.68182	6.318178	0.123263	8.319606	91.68039
		-8.69645	-8.69645		-11.0174	-11.0174
4	0.018296	92.53814	7.461861	0.130617	7.556469	92.44353
		-11.1295	-11.1295		-11.3122	-11.3122
5	0.019361	92.37748	7.622519	0.133372	7.304724	92.69528
		-12.6125	-12.6125		-11.6441	-11.6441
6	0.020041	92.59423	7.40577	0.134181	7.253678	92.74632
		-13.5325	-13.5325		-11.9032	-11.9032
7	0.020479	92.85893	7.141069	0.134351	7.268909	92.73109
		-14.264	-14.264		-12.077	-12.077
8	0.020766	93.05509	6.944907	0.134383	7.299587	92.70041
		-14.9908	-14.9908		-12.1927	-12.1927
9	0.020958	93.17355	6.826446	0.134408	7.330241	92.66976
		-15.6841	-15.6841		-12.2812	-12.2812
10	0.021087	93.2387	6.761301	0.134438	7.357096	92.6429
		-16.267	-16.267		-12.3509	-12.3509

Notes: Cholesky Ordering: LI LDS, Standard Errors: Monte Carlo (100 repetitions)

Table 9. Variance Decomposition for Korea

Variance Decomposition of LI:				Variance Decomposition of LDS:		
Period	S.E.	LI	LDS	S.E.	LI	LDS
1	0.019765	100	0	0.081054	3.767607	96.23239
		0	0		-7.55895	-7.55895
2	0.023102	99.76627	0.23373	0.102724	2.377794	97.62221
		-4.28299	-4.28299		-7.08835	-7.08835
3	0.026931	98.76076	1.239241	0.1224	4.198122	95.80188
		-3.99355	-3.99355		-8.19928	-8.19928
4	0.029722	97.23416	2.765838	0.138483	5.705997	94.294
		-5.29946	-5.29946		-9.23975	-9.23975
5	0.032179	95.0728	4.927203	0.152848	8.241795	91.7582
		-6.53097	-6.53097		-10.9795	-10.9795
6	0.034287	92.38633	7.613674	0.165664	11.11894	88.88106
		-8.78309	-8.78309		-12.7173	-12.7173
7	0.036155	89.23916	10.76084	0.177299	14.36836	85.63164
		-11.0019	-11.0019		-14.5966	-14.5966
8	0.037831	85.73493	14.26507	0.187899	17.82596	82.17404
		-13.4092	-13.4092		-16.2771	-16.2771
9	0.039358	81.98362	18.01638	0.197593	21.40274	78.59726
		-15.5849	-15.5849		-17.7794	-17.7794
10	0.040769	78.10419	21.89581	0.206465	25.00394	74.99606
		-17.582	-17.582		-18.9809	-18.9809

Notes: Cholesky Ordering: LI LDS, Standard Errors: Monte Carlo (100 repetitions

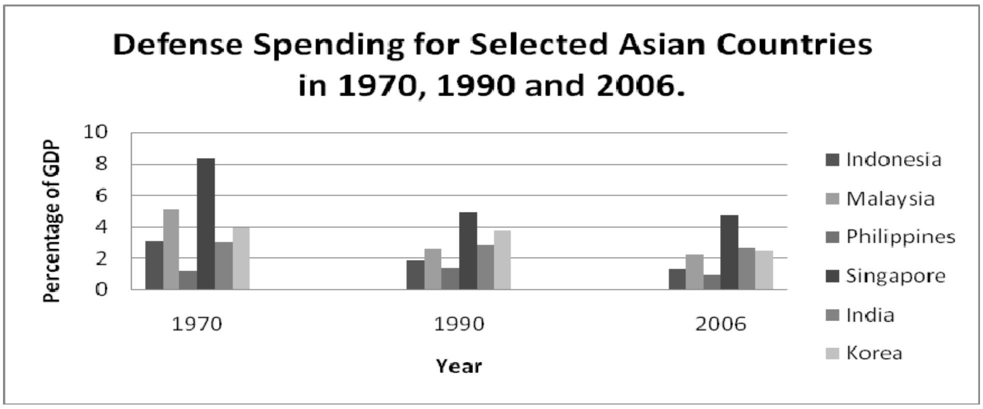


Sources: SIPRI yearbook, various issues

Figure 1. Defense spending in Asian countries

Sources: UTIP-UNIDO

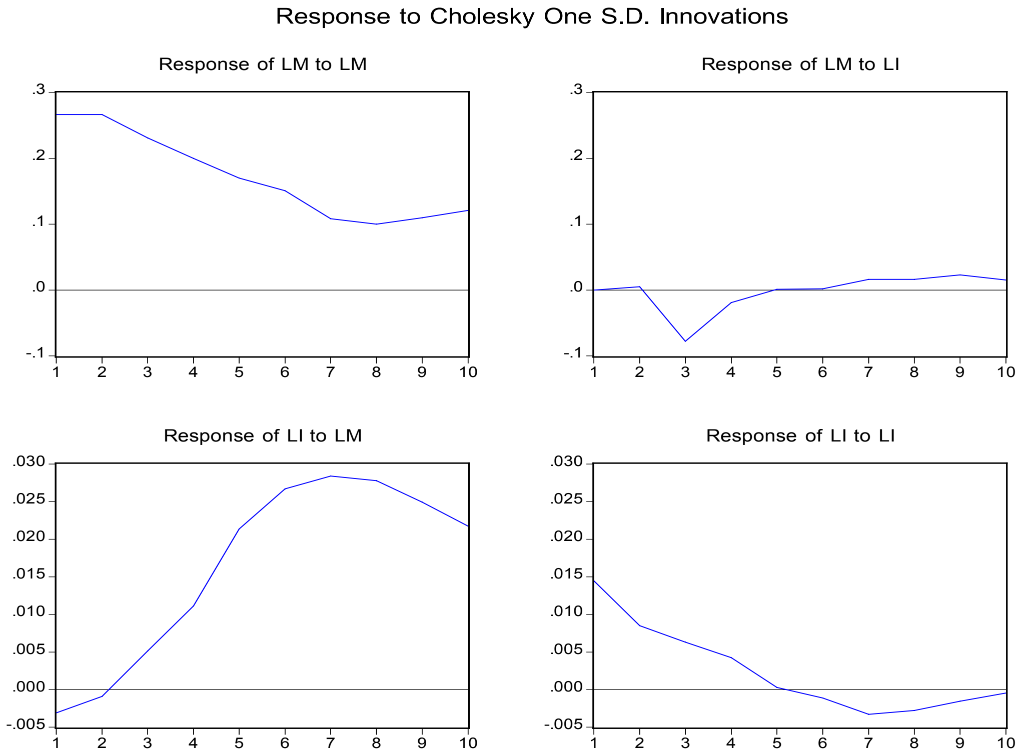
Figure 2. Income inequality in Asian countries



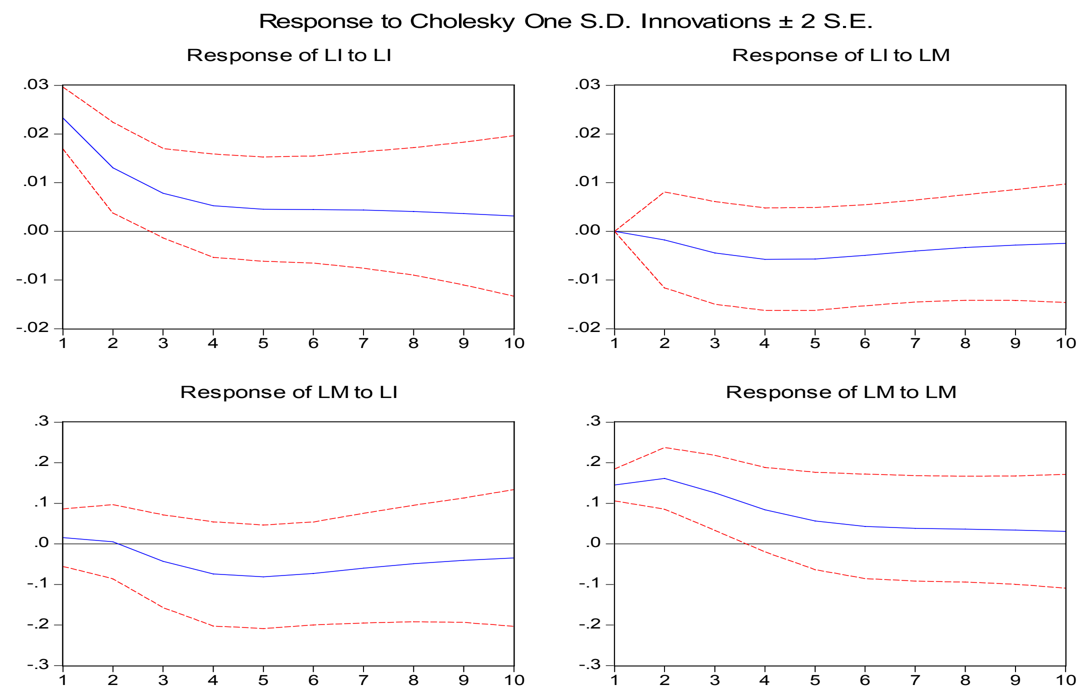
Sources: SIPRI yearbook, various issues

Figure 3. Defense spending for Selected Asian Countries in 1970, 1990 and 2006

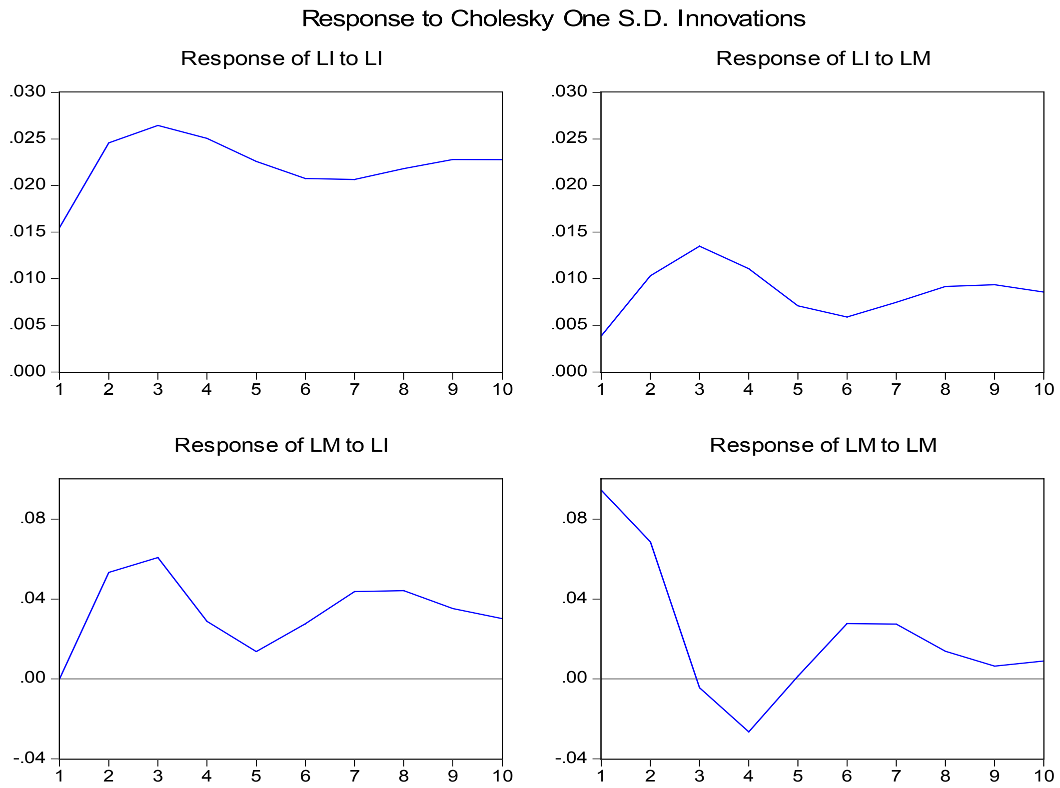
Malaysia



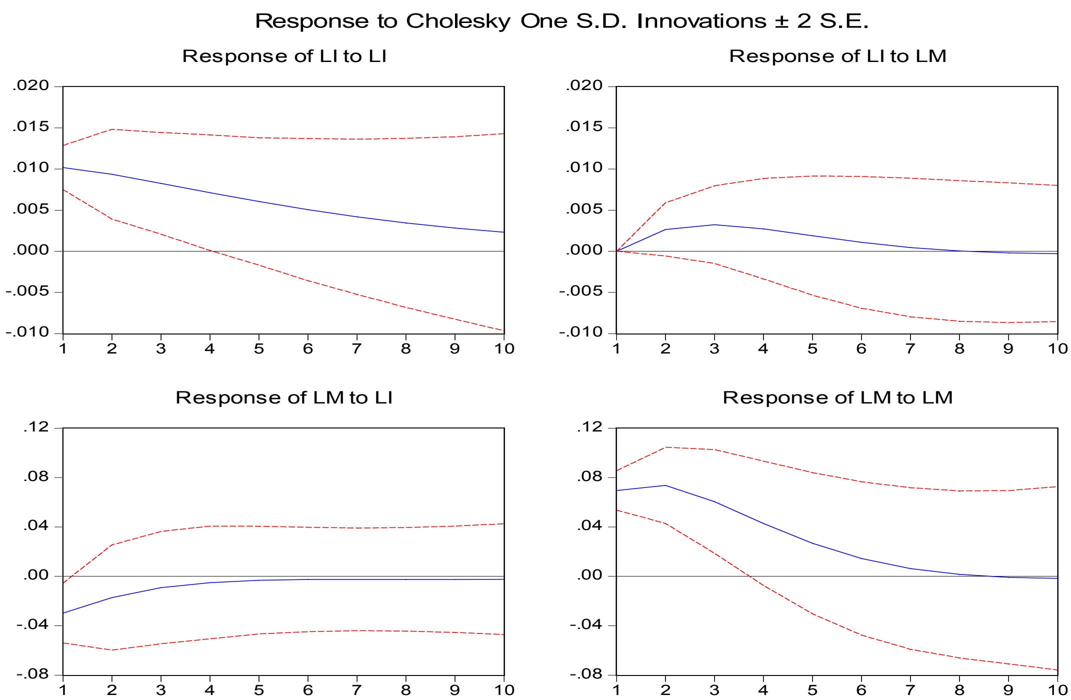
Philippines



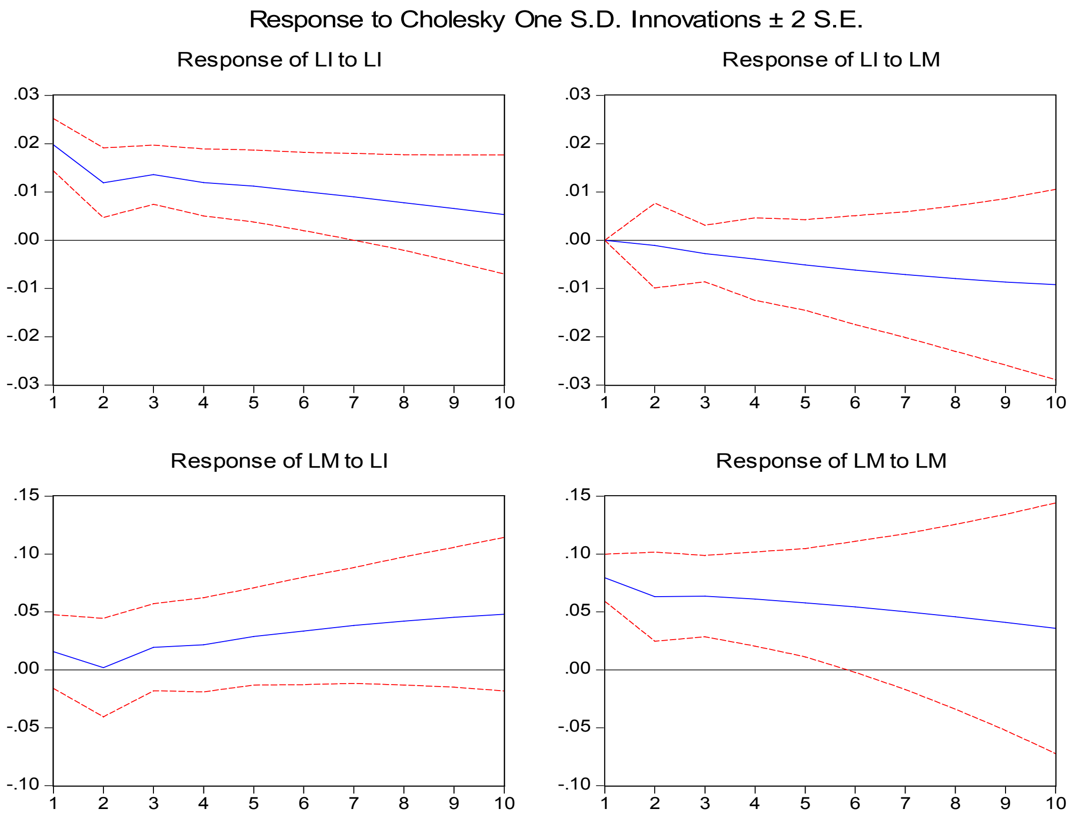
Singapore



India



Korea



Notes: LM denotes defense spending. LI denotes income inequality.

Figure 4. The Results of Impulse Response for Asian Countries