TOURIST ARRIVALS IN KOREA: HALLYU AS A PULL FACTOR.

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Econometric modelling on tourist arrivals has concentrated mostly on forecasting. We abstract and assess the impact on arrivals to Korea from China, Hong-Kong, Indonesia, Japan, Taiwan, Singapore and Malaysia using a number of macroeconomics variables (unemployment, inflation, GDP, exchange rate) sentiment, mood and most importantly ‘Hallyu’ (Korean cultural wave) which is quantified for the very first time. Effectively we test how each variable ‘measures up’ against all other variables. Our analysis is twofold. Firstly, we use impulse response functions to assess the risk, magnitude and duration that each shock has on short term arrivals from each country separately. Secondly we concentrate on systemic effects and use causality tests to examine the effect of each variable on arrivals for all countries simultaneously. We find that the effect of our variables is not uniform but most importantly that ‘Hallyu’ cannot be ignored.

Keywords: tourist arrivals, macroeconomic shocks, ‘Hallyu’ quantification, impulse response functions, Dumitrescu-Hurlin causality

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1 INTRODUCTION

Tourism is a very important industry for some countries since it contributes quite a lot to their GDP. Korea is a highly industrialised country which is mostly known as a car (Hyundai, Kia, SsangYong) and electronics manufacturer (Samsung, LG and Daewoo) and less as a tourist destination. However the last few years, Korea has attracted attention and is now a very popular tourist destination among neighbouring countries (Kim and Ryoo, 2007; ‘Soap, Sparkle and Pop’ The Economist, 2014). This recent emergence of Korea as a popular tourist destination can be attributed among other factors to the effect that Korean culture (movies, music, language, fashion, animation, books etc) as a tourism pull factor has on neighbouring countries and beyond. This infatuation with Korean culture is greatly documented in the local and international press and it has been dubbed the ‘Korean wave’ or ‘Hallyu’ in Korean. This made local press such as the Korean Times (06-05-2009) to feature an article entitled ‘Hallyu Becoming Global Cultural Icon’ to capture the effect of this phenomenon among others. Hallyu has also helped to attract foreign investment (Yoon, 2014) and has reached as far as Israel and Palestine (Otmazgin & Lyan, 2013). Even though nowadays Korea is considered an established tourist destination, there is still a huge variability in tourist arrivals on a yearly level, let alone on a monthly level that makes modelling future arrivals especially difficult. In order to make the modelling process easier and identify the most important tourism determinants, first we investigate idiosyncratic short term effects of i) macroeconomic, ii) mood, iii) sentiment and iv) Hallyu shocks on tourist arrivals from each country. Secondly we concentrate on systemic effects and investigate causalities between the same variables and arrivals in an attempt to help authorities to manage their long term strategy. Variability in tourist arrivals is an accepted global phenomenon. Variability whether short term or long term can have an adverse effect on planning, policy making and regulation for the government but also on budgeting for tourist operators who make their bookings and close their deals a year in advance (Uysal & O’Leary, 1986). Shocks on the variables mentioned above and their effect on arrivals (magnitude, rate of decay etc) is of tremendous significance to tourist operators.

Taking variability in tourist arrivals as a fact of life and responding to the econometric modelling challenge, researchers in the area of tourism have embarked on a ‘crusade’ to model arrivals in the best way possible. We also respond to this challenge and assess the impact on arrivals/visitors in Korea from China, Hong-Kong, Indonesia, Japan, Taiwan, Singapore and Malaysia. Those countries represent more than 60% of total visitors to Korea (see figure 1).

In the two paragraphs that follow we present past literature. We place emphasis on econometric techniques and explanatory variables used in the modelling process and how we differ. A number of techniques have been used in the past to forecast tourism demand. Law (2000) uses back-propagation and neural networks for Taiwan and Hong-Kong; Chu (1998, 2004, 2008 and 2009) looks into 9 Asia-Pacific region countries using cubic polynomial and ARMA techniques. Emphasis is on forecasting tourism demand. We on the other hand, innovate by investigating i) the effects of shocks (macroeconomic, sentiment, mood and Hallyu) on arrivals and ii) causalities between our variables and arrivals. In order to achieve this, we use VAR, impulse response functions (IRFs) and perform Dumitrescu-Hurlin (D-H) panel Granger causality tests. Analytically IRFs are used to study the short term effect, magnitude, duration and decay (within a period of 12 months) of a shock in our variables on arrivals from each country. This is helpful both for Korean authorities and operators to adjust their short term strategy if unexpected events (shocks) occur. The emphasis here is on idiosyncratic shocks from individual countries. D-H panel causality tests concentrate on systemic effects. Such tests will help the Korean authorities and operators to broaden their outlook and determine their long term strategy by indicating which variables have an impact on the industry as a whole from all neighbouring countries.

In an attempt to improve econometric modelling, researchers have added a number of variables over time besides macroeconomic indicators. Obviously it makes sense for individuals to consider exchange rate and consumer price index when deciding where to go. Smithers (2016) a reporter for The Guardian, indicates that tourism booms in the UK after post referendum fall in pound. Kah & Lee (2013) show that a depreciation of the Japanese Yen has made it more expensive for Japanese tourists to travel to Korea. In addition Lee (2013) with reference to Korean tourism reports that the coefficients of relative prices and exchange rates were significant and elastic. Song et al. (2010) employ GDP of country of origin and CPI in destination country (Hong-Kong) relative to CPI in country of origin adjusted by the exchange rate. Gounopoulos et al (2012) use unemployment of country of origin, relative CPI (CPIGREECE/CPIORIGIN) and confidence index of country of origin in order to forecast short term arrivals in Greece. More recently Dragouni et al (2016) use confidence indexes to capture sentiment and financial indexes such as S&P500 to capture mood[[1]](#footnote-1).

This paper considers all variables discussed above and innovates by adding ‘Hallyu’ using a variety of techniques. ‘Hallyu’ is quantified by obtaining expenditure on Korean cultural products such as movies, TV series, music, animation, books etc adjusted by number of tourists. The higher the spending, the stronger the ‘Hallyu’. We call this new variable cultural consumption per visitor or CCV. Effectively CCV is a proxy for ‘Hallyu’ which is a tourism pull factor. We are not aware of a similar phenomenon such as ‘Hallyu’ occurring in any other country and we believe that it is exactly this characteristic that makes this study unique and innovative. We have not come across a study that investigates the impact of macroeconomic variables, sentiment (captured by confidence index, CCI) and mood (captured by financial indexes, FIN) on Korean tourism let alone including ‘Hallyu’ as a pull factor. We believe that we add substantial value by quantifying ‘Hallyu’ to the best of our ability and data available to us and examine how it compares against established macroeconomic variables, sentiment (captured by confidence index, CCI) and mood (captured by financial indexes, FIN). Essentially we are testing the hypothesis if cultural factors such as Hallyu have an effect on tourist arrivals considering established factors as well. This is achieved by using Impulse Response Functions (IRFs) and D-H (2012) panel data analysis following Galariotis & Giouvris (2015) and Bilen et al. (2015). D-H non-causality test for heterogeneous panel models with fixed effects allows for heterogeneity in the regression model and the causal relationships. This technique will help us identify if there is a unidirectional or bidirectional relationship between our variables and arrivals.

In this paragraph we provide a glimpse of our results. IRFs show that Hallyu has an impact on short term arrivals regardless of country. On the contrary unemployment has a time varying effect and it is more country specific. D-H confirms a unidirectional effect from UNE to arrivals. In a nutshell, these are the two variables that stand out in terms of consistent results obtained by both techniques. It is in the interest of Korean authorities to reinforce Hallyu and manipulate EXR and RCPI to achieve a higher number of arrivals.

To the best of our knowledge, research in assessing factors that could have an impact on tourist arrivals in Korea is scarce. We aim at closing this literature gap however the most important contribution of this paper is the introduction of a new time series variable that captures ‘Hallyu’ and the effect that Korean culture has on tourism among other variables. The first part of our analysis is a longitudinal/time series study. The second part is a panel study. On one hand, our IRFs allow readers to visualise and assess idiosyncratic short term effects and their magnitude on arrivals over time. On the other hand, D-H (2012) panel data analysis allows a systemic outlook and provides an overall picture of causality between visitors and all other variables[[2]](#footnote-2).

This paper is structured as follows. Section 2 discusses the relevant literature and each variable separately. We draw the reader’s attention to common reference points between ‘Hallyu’ and film induced tourism. Section 3 discusses our sample; we present and analyze descriptive statistics as well as correlations between our variables including orthogonalization. Section 4 concentrates on methodology and in section 5 we discuss our findings. Section 6 concludes.

2 RELATED LITERATURE

In this section we discuss ‘Hallyu’, mood (captured by financial indexes, FIN), sentiment (captured by confidence index, CCI) and the macroeconomic variables that we include in our model. As you can see we dedicate a large part of this section on ‘Hallyu’. We believe that it is important that readers get a very good understanding of ‘Hallyu’ induced tourism. Before proceeding with our variables discussion, we would like to remind readers of the hypothesis of this study briefly mentioned in introduction. It will help with putting all variables in perspective. Essentially in this study we are testing the hypothesis if cultural factors such as Hallyu have an effect on tourist arrivals considering established factors as well. For example is Hallyu strong enough to counterbalance a higher price level in Korea or a more expensive Won that will normally put off potential tourists? Is the desire, to ride the Korean wave (be part of the Hallyu wave), strong enough so as to put well established factors in second place? How do all variables measure up against each other? We start our literature review by discussing Hallyu first.

2.1 Hallyu- cultural consumption per visitor (CCV) as a tourism pull factor: capitalising on the Korean wave

Korean popular culture has attracted a lot of attention the last decade. By ‘popular culture’ we mean TV dramas, movies, pop songs, fashion and books/magazines. Neighbouring countries such as China, Taiwan, Hong-Kong, Japan, Singapore, Malaysia and Indonesia appear to ‘consume’ Korean popular culture at an increasing rate. Korean culture is gaining ground and even overtaking Japanese and/or Hollywood popular culture in Asia (Visser, 2002). Newspapers and magazines have dubbed this infatuation with Korean popular culture the ‘Korean wave’ or Hallyu (Han ryu) in Korean. One of the most recent and well known manifestations of ‘Hallyu’ is rapper Psy’s performance of ‘Gangnam Style’ which became an instant sensation. In addition Lee and Bai (2016) interview 24 fans of Korean pop star Ahn Jae-wook and find that pop culture as an autonomous agent delivers a more powerful and stronger influence on destination image than previously recognised in the literature. Specifically, the Korean wave started back in 1997 with the airing of Korean television dramas such as ‘*What Is Love All About*?’(and then again in 1998 as a result of popular demand achieving the second highest rating in Chinese TV, Heo (2002)), ‘*Stars In My Heart*’ which became a big hit both in China and Taiwan and ‘*Shiri*’, a blockbuster which earned US$14 million in Japan only (Kim 2000).

A more recent hit was the ‘Winter Sonata’ which was first aired by the Nippon Hoso Kyoaki broadcast company in 2002 and re-aired again three times. This TV drama was not confined within Asia but reached as far as Egypt, Ghana and the US (Kim et al., 2007). Following the broadcast of the ‘*Winter Sonata*’ in neighbouring countries and other countries further away increased tourist arrivals in Korea by 35.5% (Korean National Tourism Office, 2006). In the words of Park Young Su, assistant bureau chief at the Korea National Tourism Organization: ‘thanks to the success of shows like ‘*Autumn In My Heart*’ and ‘*Winter Sonata*’ we have had 130,000 tourists coming to visit the locations where the dramas were filmed’ (Lee, 2003). In addition, a report by the Hyundai Economic Research Institute (2004), the economic impact of ‘*Winter Sonata*’ reached US$ 1 billion in Korea and US$ 2 billion in Japan. KBS News (2005) reported that the sales of video tapes, DVDs, CDs and photos exceeded US$370 million. Besides the impact that Korean movies/ TV shows have on tourist arrivals in the country as indicated above, there seems to be an increasing demand for buying remake rights for older Korean horror films such as ‘*A Tale Of Two Sisters’* by major Hollywood film makers namely DreamWorks SKG in an attempt to capitalize and ride the ‘Korean wave’. Specifically Ho (2003) reports that DreamWorks SKG paid US$ 2 million for the remake rights of ‘*A Tale Of Two Sisters’* which is twice the amount paid for ‘*The Ring’*, a Japanese horror movie. Of course Korean pop music videos did not fall back but contributed to the Korean wave as well. We are not going to go into details as we did before for the movie/TV drama series wave but it will suffice to say that in South-East Asia there are two pop music movements, K-pop which stands for Korean pop music and J-pop which stands for Japanese pop music.

Film induced tourism is a well established phenomenon. Korea is not the only country which has benefitted from it. Actually the effect in Korea was so strong so that a new term was established. It is called ‘Hallyu’ tourism. Other countries which benefitted from film induced tourism but without branding it were Australia which according to Tooke & Baker (1996) showed an annual increase of 20.5% from 1981 to 1988 for a number of reasons including the shooting of movies such as Mad Max, The Man From Snowy River and Crocodile Dundee. The US which is the biggest film/TV series producing country in the world also benefited from film induced tourism. Riley et al (1998) analysed 12 film locations in the US and conducted a before/after movie release study. They found that visitation increased by 43%, 5 years after the movie was released compared to pre-release numbers. A similar before/after TV show broadcast (Balamory) study is that of Connell (2005 a,b). Connell reported a 43.3% increase in average per capita spending 5 months after the broadcast compared to 1 year before. Associated press of London reports that 1/5 of the 28 million tourists who visit Britain do so after watching a movie or TV series shot in the UK. They report that the income generated as a result of film induced tourism is in the region of US$2.8 billion (Associated Press, 2005, p1). The effect of movies, TV series or music on tourism is clear however all of the studies above are static in nature and they only report an increase in tourist arrivals and income. They are not longitudinal/time-series studies and can not investigate if cultural consumption (proxied by money spent on movies, TV series, CDs, DVDs, music, animation, cartoons etc adjusted per visitor) can predict future tourist arrivals among other competing variables (mainly macroeconomic variables such as: inflation, exchange rate, unemployment, GDP or even sentiment (captured by confidence index, CCI) and mood (captured by financial indexes, FIN)). In addition because of their static nature, all previous studies although very useful can not investigate how a shock/change in cultural consumption or any other variable can affect arrivals in the short/long run and how long it will take to return to pre-shock levels. Admittedly it is difficult to quantify cultural consumption or ‘Hallyu’ over a long period of time in order to investigate the effects that cultural consumption has on tourist arrivals however we have managed to identify a good proxy for ‘Hallyu’. This is the amount of money spent on movies, TV series music etc. The Korea National Tourism Organization has data on money spent on movies music, TV series etc for each country in our sample. Obviously the more money potential tourists spend on movies, TV series and music, the more acquainted they get with Korean culture and the more likely they are to visit the country due to the positive impression delivered by cultural products leading to a higher number of tourists and even more spending. Obviously there could be a bi-directional feedback but this needs to be investigated. According to Korean Times (06-05-2009) in an article entitled ‘Hallyu Becoming Global Cultural Icon’, a local polling agency namely ‘Net Intelligence & Research’ conducted a public survey in China and Japan in 2004 and 2006. It showed that 60 percent of Chinese who have been watching Korean TV dramas have a positive image of the country while 42.5 percent of Japanese said that their impression of Korea has changed in a positive manner (Kang, 2009). Korean TV dramas also had a positive impact on Korean cuisine and how it is perceived internationally. 이상미 (2015) investigates the impact of Hallyu on Korean food consumption. The author identifies Korean food’s function and recognition which is observed in films and dramas. The study finds that Hallyu is highly influential and increases purchase intention which includes cooking Korean food, visiting Korean restaurants, and recommending Korean food to other people.

Hallyu had an impact on other areas of the economy such as fashion (Lee, 2014) and cosmetic industry (Park, 2014). Specifically, exports of local cosmetic products increased by 20.9% in 2013 (The Korea Times, 2014). KOTRA (대한무역투자진흥공사)/KOFICE (한국문화산업교류재단), (2016) reports that the consumption of cultural products and tourism spending in 2015 is $7 billion which indicates an increase of 2.4% from 2014 (title: 한류의 경제적 효과에 관한 연구). There has also been observed an increase in Korean medical tourism. According to the Korea Health Industry Development Institute, ‘Mi Clinic’ in Myeong Dong, Seoul, had 9,366 foreign patients and ‘Jaseng Hospital of Oriental Medicine’ had 1,500 foreign patients in 2012. Foreign tourists spent $115 million on medical services in 2011 (Park, 2013). 이형룡, 김유진, 김정매 (2013) investigate the impact of Hallyu on tourists’ intentions from China and Japan to visit Korea for medical treatments. According to이형룡, 김유진, 김정매, the most important consumer of cultural products such as music, film and TV drama is women. The study shows that the perceived image of Korean culture obtained from music, films, and TV dramas has a statistically significant positive impact on their intention to visit Korea for medical treatments (title: 한류문화컨텐츠에 대한 이미지가 의료서비스 참여도에 미치는 영향-일본, 중국 여성관광객을 대상으로-, pp. 129-144).

The effect of Hallyu was so strong that the Korean government began thinking of ways to capitalise on the Hallyu effect in an attempt to further enhance South Korea’s exports, international presence and diplomatic leverage among other objectives. For this reason, the government established a presidential council on nation branding in 2009. The aspiration of the council was to raise South Korea’s position by a massive 18 places over four years in the Anholt-GFK Roper Nation Brands Index[[3]](#footnote-3). The presidential council was dismantled in 2013 as Korea achieved a nation brand above the OECD average, overtaking countries like Spain, Finland and Ireland. As of 2016 Korea is not at the top 10 list which is an incentive to resurrect the council and promote Korea to achieve a place at the top 10 list. Despite not being at the top 10, there were huge benefits. The Export Import Bank of Korea:한국수출입은행 (2012) investigates cultural exports and consumption across 92 countries between 2001 and 2011. Their study (entitled: 한류수출 파급효과 분석 및 금융지원 방안) shows that cultural product exports can stimulate and enhance the overall volume of exports. They emphasize that cultural consumption is not just an important factor for exports but it is also related to country brand image which provides a stimulus for maximising economic effect. Additionally the Korea Chamber of Commerce & Industry: 대한상공회의소 (2012), cited in The Export and Import Bank of Korea 한국수출입은행 (2012), conducted a market based survey which included 300 mid-sized manufacturing companies. The survey showed that 51.9% of the companies observed a positive direct impact on their profits due to the expansion of the Hallyu phenomenon.

Hallyu did not have only positive results as most readers would expect. The effect was so strong that it actually ignited an anti-Hallyu sentiment in some neighbouring countries. This is definitively and indication of its success. Specifically, Taiwan’s national broadcasting regulator ordered Gala TV (GTV) station to cut down on broadcasting Korean dramas. The reason for this order was that broadcasting Korean dramas inhibit the development of local content/dramas. The overall percentage of domestic productions broadcasted should not be less than 20% (‘Taiwan orders TV station to reduce S Korean programs’, The Korea Herald, 3/1/2015). Of course the Japanese anti-Hallyu sentiment was not as soft as in Taiwan. Japan and Korea are well known antagonists and their rivalry has started many years ago at least since WWII. Anti-Hallyu feelings in Japan were expressed through rallies, protests and chanting of hatred messages. Korean film promoters in Japan report having problems signing new deals in Japan but this is not confined only in the film industry. It appears that it affects all businessmen selling cultural products in Japan. Korean restaurants, cosmetic and gift shops are also affected. Actually, every single aspect of Korean business appears to be affected even Japanese websites that promote Korean culture. For instance, WK, the biggest Japanese website that promotes Korean culture reported a 25% drop in visitors as a result of the anti-Hallyu sentiment. The author of the article, Park Si-Soo believes that this is a result of the sluggish Japanese economy (Park, 2013).

To summarize Hallyu has been met with mixed feelings. Korean officials report an increase in visitors and spending (Lee, 2003 and Korean National Tourism Office, 2006) as a result of it while at the same time in neighbouring countries, we observe anti-Hallyu protests (for example in Japan) or measures against Hallyu (Korean TV show prohibitions in Taiwan). At the moment all research in Hallyu is static in nature and employs a ‘before Hallyu/after Hallyu’ methodology similar to Tooke & Baker (1996) and Riley et al. (1998). There is no research that looks into the dynamics of Halluy over a longer period of time (since data has become available) so as to actually ascertain if there is a real effect on tourism using causality testing and consequently to the economy of Korea. Most importantly there is no research on how Hallyu affects tourism in the short run. Oh (2005) employing a Granger causality approach shows that the Korean economy did not grow as a result of tourism at least for the period under examination (1975-2001). We innovate by investigating (ever since expenditure on movies, music, books, animation, fashion etc has become available) if Hallyu i) is driving tourism in the long run (using causality) and consequently contributes to the growth of the Korean economy and ii) short run shocks and their effect on arrivals (using IRFs). Currently the contribution of tourism to GDP is 5.1% despite a continuous downward trend. If the effect of Hallyu is statistically significant considering all other tourism inducing variables described below then Hallyu is contributing to the Korean economy thorough tourism as well. If this is found to be the case then Hallyu must be reinforced[[4]](#footnote-4). Investigation of the effect of Hallyu on tourism and consequently to the Korean economy is achieved by looking at shocks on inbound tourism from each neighbouring country separately and as a totality emphasizing systemic effects employing a D-H causality approach. Looking into the effect of all variables for all countries simultaneously, will help Korean authorities determine which variables have the strongest effect and in what direction (single or bi-directional) and pursue a basic strategy for their tourism industry. Our individual regressions and IRFs allow us to concentrate on specific countries and short run effects from those countries. IRFs would be helpful to operators who need to adjust their short term strategies. We believe that by looking at both individual countries and all countries simultaneously gives this study an extra advantage.

2.2 Sentiment (captured by confidence index, CCI) and mood (captured by financial indexes, FIN)

Sentiment (captured by consumer confidence, CCI) and mood (captured by financial indexes, FIN) are variables that capture the ‘feeling’ of the respondents about the economic condition in a country. Essentially those variables reflect expectations and aspirations. Better sentiment or being in a good mood means that consumers feel very confident and are enthusiastic about the future economic conditions in their country and increase their spending. Better sentiment and happy mood could potentially translate into more holidays in foreign countries. The distinction between sentiment and mood is at best hazy and the two terms are used interchangeably. Dragouni et al (2016) show that those two terms capture different dimensions of the human psycho-synthesis and use two proxies to capture sentiment and mood. They use Michigan’s index of consumer sentiment to capture sentiment and S&P500 to capture mood. Yap and Allen (2011) find that the consumer sentiment index has significant impact when visiting friends and relatives but not on holiday tourism. Croce (2016) finds that tourism confidence index (TCI) provides a meaningful indication about tourist arrivals and improves forecast accuracy however accuracy gains vary greatly across regions and can hardly be generalised. Gounopoulos et al (2012) find that the consumer confidence has no bearing on future tourists’ arrivals. Given the ambiguity as to the effect of sentiment (captured by consumer confidence, CCI) in predicting/determining tourist arrivals we decided to include it our study in an attempt to provide further evidence. We have not come across a study that uses a financial index such as S&P500 to capture mood except Dragouni et al (2016) so we decided to add mood as well by incorporating a financial index for every country in our sample.

2.3 Unemployment and GDP

Unemployment and GDP are hardcore macroeconomic indexes that we are considering in our analysis. Unemployment and GDP[[5]](#footnote-5) are good indicators of the current state of the economy of each country in our sample. Kim et al (2016) find that per capita GDP among other variables (relative prices, and exchange rate) is a significant determinant of Japanese inbound tourism from Korea. Unemployment also appears to have an effect on the psychological well-being and satisfaction of consumers (Winkelmann, 2014). A negative psychological condition implies that fewer people will consider holidays abroad.

2.4 Relative consumer price index (RCPI)

Relative consumer price index (RCPI) which is defined as CPI of destination country (Korea) relative to CPI of country of origin shows how expensive Korea is in relation to the other countries. Past research shows that tourists from Japan, USA, UK and Hong-Kong consider the current price level in Korea relative to their country to make a decision (see Lee, 2013). Similarly Korean tourists planning a visit to Japan also consider the price level in Japan relative to Korea (Kim et al, 2016). The price level in Hong-Kong is a very important determinant of expenditure incurred by visitors from Australia, UK and US relative to their countries (Song et al, 2010). It is only normal that potential visitors consider how expensive goods and services are in the country they plan to visit. If it is very expensive then they may decide to cancel their trip. If they decide to visit despite the high prices observed, then they keep their spending to a minimum as indicated above. Research also shows that price competitiveness is time varying for tourists from certain countries. Chang et al (2012) show that price competitiveness is important for tourism demand for Japan, Korea and Hong Kong in the long run, and for Hong Kong and Taiwan in the short run for Thai tourists visiting those countries.

2.5 Exchange rate

The prevailing exchange rate is an important tourism demand determinant. An overvalued local currency will deter tourists visiting the country in question or reduce the number of days they spend in their chosen destination. The press is ‘littered’ by articles on the effect of the exchange rate on tourist demand. Smithers (2016) a reporter for The Guardian indicates that tourism booms in the UK after post referendum fall in pound. Kah & Lee (2013) show that a depreciation of the Japanese Yen has made it more expensive for Japanese tourists to travel to Korea. Kim et al (2016) find that the exchange rate among other variables (relative prices, and GDP) is a significant determinant of Japanese inbound tourism from Korea. In addition Lee (2013) with reference to Korean tourism reports that the coefficients of relative prices and exchange rates were significant and elastic.

3 DATA

3.1 Sample

Our database starts in 2007 and ends in 2013. We use monthly observations for our VAR impulse response function and D-H (2012) panel data analysis. We would love to use a much bigger database but cultural consumption per visitor (CCV) is not available before 2007 so this variable determines the starting point of our dataset. Also there is no data after 2013. All of our variables (unemployment, exchange rate, relative consumer price index, sentiment (captured by confidence index, CCI), GDP and mood (captured by financial indexes, FIN) for all our countries were downloaded from Datastream. Expenditure on Korean cultural products (movies, TV series, music etc) and tourist arrivals from China, Hong-Kong, Indonesia, Japan, Taiwan, Singapore and Malaysia was obtained following communication from the Korean National tourism office. The reader at this point might be thinking what made us choose those specific countries to be our sample. Data availability was a very important factor but as you can see in Figure 1 (entitled ‘% of arrivals of our sample relative to world arrivals’), the countries selected make up on average more than 60% of total arrivals in Korea. The data used in this graph is much longer than the data used in our VAR impulse response functions and D-H analysis and as you can see the percentage of arrivals from our sample countries remains quite high and is relatively stable over a number of years. The lowest percentage (60%) occurs in 1996. the lowest percentage achieved in our VAR impulse response sample and D-H (2001-2013) is 65% and occurs in 2007-2008.

3.2 Descriptive statistics:

3.2.1 Tourist arrivals: short overview

Tourist arrivals show a constant increase from 1984 on a yearly basis (figure 2, lower graph). There appears to be a single decrease in 2003. The effect is quite short lived, just for a year. Now looking at each country separately (figure 3), we can clearly see that the percentage of Japanese tourists relative to arrivals from the rest of the countries in our sample is constantly reducing over time. This contrasts with a continuous increase observed in Chinese arrivals. Hong-Kong, Singapore and Indonesia exhibit peaks and troughs.

3.2.2 Cultural Consumption Per Visitor (CCV)

Cultural consumption per visitor (CCV): the average change in CCV presented in table 1 is positive for all countries in the sample. Singapore shows the highest value and standard deviation followed by Indonesia. Positive average percentage changes over time indicate that ‘Hallyu’ has a strong effect on cultural consumption per visitor.

3.2.3 Sentiment captured by Consumer Confidence Index (CCI) and mood captured by financial indexes (FIN)

The mean percentage change in consumer confidence index (CCI) is negative for China, Hong-Kong and Japan which perhaps could translate into reduced arrivals from those countries. Indonesia and Taiwan show positive mean changes which could translate into higher tourist arrivals to Korea. CCI is not available for Singapore and Malaysia. Returns of financial indices are positive but small

3.2.4 Relative Consumer Price Index (RCPI)

Relative CPI (CPI in Korea/CPI in country of origin) is calculated in accordance to Gounopoulos et al., (2012) and Song et al. (2011). A low relative CPI means that prices in Korea are lower compared to country of origin. We obtain negative mean percentage changes in relative CPIs for all countries in the sample except Japan and Taiwan (see table 1). This means that the level of inflation is higher in those countries (China, HK, Indonesia, Singapore and Malaysia) and Korea could be an attractive destination. We obtain the highest CPI for Japan but Japan is well known for its low level of inflation so relative CPI appears high.

3.2.5 Unemployment (UNE)

The mean percentage change in unemployment presented in table 1 is negative for all countries in our sample except Malaysia and Taiwan but even for those countries for which we observe a positive value, the mean percentage change is very small.

3.2.6 Exchange rate (EXR) and GDP

The mean change in the exchange rate is positive for all countries in the sample except Indonesia and Malaysia. GDP is negative for four out of the seven countries in our sample.

3.3 Correlations between variables

Table 2 presents correlations between all our variables for all countries in our sample. The first number in each cell of the table represents correlation and right underneath we present p values. Some correlations are statistically significant (highlighted in bold) and for this reason we orthogonalise all our variables. We decided to orthogonalise all our variables because if we orthogonalise only those which are significantly correlated, we could be introducing new significant correlations between variables which were not previously correlated. After orthogonalisation, no correlation is present (p=1) which means that all our variables can be used together in regressions. Any common elements between variables have now been removed. The second table for each country presents correlations after orthogonlisation.

3.4 Stationarity

Before performing any tests or running any regression it is imperative that we test for stationarity. We perform Phillips-Peron test for all our variables. The null hypothesis is that our variable has a unit root i.e non stationary. Table 3 presents unit root tests. Tests are performed on monthly observations. The number in brackets in each cell of the table shows probability. We present results after taking first differences. Financial indexes returns are stationary before taking differences because of the way they are calculated.

4 METHODOLOGY

In this study we employ two techniques to study tourism determinants in Korea. Our VAR equations are given below. They help us create our impulse response functions (IRFs) graphs and are used to isolate the impact of a macroeconomic shock (unemployment (UNE), relative consumer price index (RCPI), relative exchange rate (EXR) and GDP), sentiment captured by consumer confidence index (CCI), mood (captured by financial indexes, FIN) and cultural consumption shock (CCV) from each country to tourist arrivals to Korea assuming that all other variables are held constant. Yi,t captures tourist arrivals in Korea at time t and Xj,t captures our macroeconomic variables and cultural consumption from the country of visitors at time t:

Yi,t = ξ10 + β11 Yi,t-k+ β12 Xj,t-k + ui,t (eq 1)

Xj,t = ξ20 + β21 Xj,t-k + β22 Yi,t-k + uj,t (eq 2)

Where Xj,t = f {sentiment captured by consumer confidence index (CCI), cultural consumption per visitor (CCV), relative consumer price index (RCPI), exchange rate (EXR), unemployment (UNE), GDP, mood (captured by financial indexes, FIN)}. The term β denotes the vector of coefficients that represent the effect of Xj,t-k and Yi,t-k on Yi,t and vice versa. k is the number of lags. Innovations ui,t and uj,t from eqs 1and 2 are correlated and orthogonalisation is required. This is achieved by Cholesky factorisation. The new orthogonalised vector of invocations is given by et. In symbols E(ei,t,ei,j)=0 (eq 3) where i≠j. The new orthogonalised innovations must satisfy the following equation: e=uV-1 (eq 4) where V is a lower (N\*N) matrix. ut has an identity covariance matrix Ω which satisfies EeeT=Ω (eq 5) and VVT=Ω(eq 6). After successful transformation of the orthogonalised innovaton, we replace ut with etV and we rewrite the VAR as a moving average: Yt= AnVet-n (eq 7). By setting Bn=AnV, our VAR becomes Yt= Bnet-n (eq 8) where Bn are the impact multipliers.

For the Dumitrescu-Hurlin (2012) panel test the regression is given below:

Yi,t=αi+γi(k) Yi,t-k+βi(k) Xi, t-k+εi,t (eq 9)

Where Yi,t captures arrivals in Korea as before and Xi, t-k are our macroeconomic variables and cultural consumption. K ∈ N and βi = (βi(1),...,βi(K))′. The individual effects αi are supposed to be fixed in the time dimension. Initial conditions (yi,−K,...,yi,0) and(xi,−K...,xi,0) of both individual processes yi,t and xi,t are given and observable. We assume that lag orders K are identical for all cross-section units of the panel and the panel is balanced. Besides, we allow the autoregressive parameters γi(k)and the regression coefficients slopes βi(k) to differ across groups. However, contrary to Weinhold (1996) and Nair-Reichert and Weinhold (2001), parameters γi(k) and βi(k) are constant in time. It is important to note that our model is not a random coefficient model as in Swamy (1970), it is a fixed coefficient model with fixed individual effects (Dumitrescu & Hurlin, 2012, pg 1451).

5 EMPIRICAL RESULTS

5.1 The impact of macroeconomic shocks on future tourism arrivals

Table 4 presents results of the VAR model. Each equation is dedicated to a specific country. The number in brackets represents the p value. The output we obtain is quite big so we present coefficients significant only at 10%. Relative consumer price index (ΔRCPI) and unemployment (ΔUNE) are the only two variables which are significant for all countries in the sample. Each of the rest of our variables is insignificant only once. For example cultural consumption per visitor (ΔCCV) is insignificant in HK only. The only variable which is insignificant twice is ΔGDP (in HK and Japan). All variables carry mixed signs and there is sign reversal (from positive to negative and again from negative to positive) at different lags for all countries in their sample. This is because our variables are in differences (Δ), not levels. Also correlation feedbacks in addition to fluctuations of estimations at different lags could create further complications making interpretation of coefficients a bit difficult (see Gounopoulos et al., 2012).

5.2 Impulse response function results and discussion

Unemployment (ΔUNE) affects arrivals to Korea in a negative way primarily from Hong-Kong followed by Japan and Singapore. The reaction appears to be imminent and occurs within the first month. For the rest of the countries (Indonesia, Taiwan, China and Malaysia) there appears to be an initial positive reaction (arrivals increase despite unemployment) but this is short lived. Specifically in the case of Indonesia and Taiwan there is a quick steep downwards correction with a lag of 1 month. For China and Malaysia, it takes longer to correct. We observe a lag of 2-3 months. Gounopolos et al (2012) obtain similar results for US arrivals to Greece following a shock in unemployment. The position of the confidence bands suggests that the impulse response is reliable and robust. Also the impulse response reduces to zero in less than seven months for all countries. The process is stationary.

Exchange rate (ΔEXR) affects arrivals to Korea in a negative way for visitors from Indonesia, Japan and Malaysia. Reaction is imminent. With reference to Japan, Kah & Lee (2013) show that a depreciation of the Japanese Yen has made it more expensive for Japanese tourists to travel to Korea. It is worthwhile to note, the response from Malaysia which is quite strong (steep fall in arrivals). For the rest of the countries the reaction is positive. It is worth noting a spike in the case of Hong-Kong while for China and Taiwan the reaction is sluggish and this is visually captured by a straight line following the initial positive reaction. Overall the reaction to exchange rate shocks is mixed. The position of the confidence bands suggests that the impulse response is reliable and robust. Also the impulse response reduces to zero in less than seven months for all countries. The process is stationary.

Relative Consumer price index (ΔCPI) affects arrivals to Korea in a negative way for visitors from Singapore and Malaysia. Recovery occurs after 2 months. In the case of HK, response is sluggish. The line is flat. For China, Indonesia, Japan and Taiwan the reaction is initially positive but corrects within 1-2 months. The decline is more pronounced for Japan and Taiwan. The position of the confidence bands suggests that the impulse response is reliable and robust. Also the impulse response reduces to zero in less than seven months for all countries. The process is stationary.

ΔCCV appears to have a positive effect on arrivals to Korea for all countries in the sample. The reaction is imminent and strong (steep increase) for China, HK, Japan, Taiwan and Malaysia. Response from Indonesia and Singapore although positive is sluggish and the effect dies out much faster than the rest of the countries. Given that it takes quite some time for potential tourists to get acquainted with Korean culture through movies, music etc, the response appears to be quite fast and consistent for all countries in the sample. The position of the confidence bands suggests that the impulse response is reliable and robust. Also the impulse response reduces to zero in less than seven months for all cases. The process is stationary.

Sentiment captured by the Consumer confidence index (ΔCCI) affects arrivals to Korea in a positive way mainly from Japan even though the response is short lived. Response from Indonesia is quite flat while from China, HK and Taiwan is initially negative and correction occurs in 2-3 months. The reason we observe this pattern could be that visitors from China, HK and Taiwan consider Korea to be an inferior destination. This means that the more confident they feel about economic conditions in their country, the more likely they are to travel further abroad and not confine themselves within their region. Unfortunately there is no data available for Singapore and Malaysia. The position of the confidence bands suggests that the impulse response is reliable and robust. Also the impulse response reduces to zero in less than seven months in all cases. The process is stationary.

ΔGDP affects arrivals to Korea in a positive way from China, HK, Indonesia, Japan and Malaysia. It is worth noticing that the response from China and Indonesia is weak and sluggish (almost a flat line). ΔGDP affects arrivals to Korea in a negative way from Taiwan and Singapore. The position of the confidence bands suggests that the impulse response is reliable and robust. Also the impulse response reduces to zero in less than seven months in all cases. The process is stationary.

Financial indexes returns (FIN) which are a proxy for mood affect arrivals to Korea in a positive way from China, HK and Japan. The response from HK is quite weak (flat line) while the response from Japan is steeper. The response from Taiwan, Singapore and Malaysia is negative, the stronger one obtained from Malaysia (steep decrease) while for Taiwan and Singapore the response is considerably less intense. The position of the confidence bands suggests that the impulse response is reliable and robust. Also the impulse response reduces to zero in less than seven months in all cases. The process is stationary.

5.2.1 Discussion of IRFs results and implications

In the previous paragraphs we merely presented results from the IRFs. In this section we provide explanations for the results above and discuss how Korean authorities could take advantage of those findings. The IRF graphs show that it is mainly cultural consumption (CCV) that affects short term arrivals to Korea (results are positive and consistent for all countries in the sample). Normally we would expect the effect of CCV to be less intense and appear in our graphs with a time lag. We would also expect the whole effect to be short lived but it appears that it dies out very slowly. It takes at least 4 months before the response line gets to zero. GDP and unemployment (UNE) come second in our hierarchy in terms of consistent results. We would expect unemployment and GDP to have an even bigger impact perhaps comparable to that of CCV. The results obtained are neither weak nor a surprise really. Gounopoulos et al (2012) find that there is a serious lag in intensity with which unemployment affects tourist arrivals in Greece form European countries. In our case, Japan and Singapore are known to have very low levels of unemployment while China and Hong-Kong are developing fast especially China which is considered to be the power train of the world economy. These are factors that dampen the effect of unemployment. Also an increase in GDP takes quite some time to be ‘felt’ by consumers. Even though unemployment IRFs are not as consistent as CCV IRFs, it is worth noticing that the effect of unemployment is more persistent compared to that of GDP. The effect of unemployment dies out much more slowly (it takes more than 5 months for the effect to die out) while the effect of GDP lasts for about 4 months. At this point it is worth reminding our readers that our variables are orthogonalised so we are observing the ‘net’ effect of unemployment and GDP. Obviously unemployment has a longer lasting effect because it is a more ‘personal’ issue and directly affects potential tourists’ decision to go on holidays. Financial indexes returns (mood), exchange rates and the price index come third in our hierarchy. The results we obtain from IRFs are mixed. Financial indexes returns can be very volatile and unpredictable and this can make potential tourists to change their decisions really fast affecting the outcome from IRFs. A possible reason that RCPI and EXR are not having a more consistent and stronger impact could be that tourists choose ‘all-inclusive’ packages at fixed prices therefore some of the higher cost/higher inflation and/or more expensive Korean Won is absorbed by other stakeholders. Gounopoulos et al (2012) find that there is an asymmetry and a serious lag in intensity with which RCPI affects tourist arrivals in Greece form European countries. Also Chang et al (2012) find that price competitiveness is important for tourism demand for Japan, Korea and Hong Kong in the long run, and for Hong Kong and Taiwan in the short run for Thai tourists visiting those countries confirming a time varying effect. Finally CCI (sentiment) appears to produce the least consistent results even though the error bands are tight and the shock dies in about 6 month which indicates good stability of the model. Gounopoulos et al (2012) find that shocks to consumer confidence after undertaking IRF analysis have no bearing on future tourists’ arrivals and their system appears to have widening error bands. Croce (2016) even though finds that tourism confidence index (TCI) provides a meaningful indication about tourist arrivals and improves forecast accuracy stresses that accuracy gains vary greatly across regions and can hardly be generalised. If our readers wonder why CCI (sentiment) performs so inconsistently compared to financial indexes returns we need to remind them that financial indexes returns capture mood while CCI captures sentiment. They are two different aspects of the human psycho-synthesis according to Dragouni et al. (2016). In addition, all our variables are orthogonalised, so CCI (sentiment) and financial indexes returns (mood) capture two entirely different aspects of human behaviour which justifies their individual performance.

Considering the results from the IRFs, one might wonder how the Korean Tourism Organization could take advantage of the findings above. As stated, CCV is the only variable which produces consistent results for all countries followed by GDP and unemployment. Given that it is impossible for Korean authorities to control unemployment and GDP in other countries, the only option they have is to reinforce the Hallyu phenomenon in order to increase tourist arrivals from neighbouring countries. In the literature review we mentioned the establishment of a presidential council on national branding which aimed at raising Korea’s position in the Anholt-GFK Roper nation brands index by 18 places. Even though this council does not exist any more perhaps Korean authorities should consider ‘resurrecting’ it. The role of the resurrected national branding council would be to reinforce Hallyu. Tooke & Baker (1996) suggest that a subsidy might be justified to encourage film companies to choose locations which display attractive national landscapes. Taking onboard this suggestion, the Korean national branding council could introduce a subsidy system that would encompass all areas of Hallyu (movies, music, language, fashion etc and not just film companies as suggested by Tooke and Baker) so as to magnify the effect. This could compensate for a reduction in economic activity observed (specifically exports which is the basis of the Korean economy) as a result of newly introduced protectionism policies following US elections and Brexit (Jones, C (2016) and Allen, K (2016). Kim (2016) reports 184 restrictions on Korean products, up from 159 a year earlier, according to figures from the Ministry of Trade, Industry and Energy. Of course Korean authorities could also manipulate the value of their currency in order to attract visitors from abroad but our IRFs present mixed results as to the effect of EXR on short term tourist arrivals. Perhaps this could be their long term strategy if causality analysis which follows in the next section shows that EXR is Granger causing visitors.

To summarize the three variables that stand out in terms of consistency are CCV, GDP and unemployment. The rest of the variables present mixed results with consumer confidence (CCI) that captures sentiment being the most inconsistent. Mood proxied by financial indexes returns performs considerably better. Given the inability of the Korean authorities to control GDP and unemployment in other countries, their best option is to reinforce the Hallyu phenomenon in every possible way to increase arrivals. This could be achieved by introducing a new national branding council.

5.3 Dumitrescu-Hurlin Panel Causality tests and discussion

Having performed individual analysis for each country, the next step is to look at all countries together and test for Granger causality in a panel data setting. This will broaden Korean authorities’ understanding of the systemic effect of all variables on arrivals. The null hypothesis is that visitors (ΔVISI) *do not* homogenously cause ΔCCI, ΔCCV, ΔRCPI, ΔEXR, ΔUNE, ΔGDP and FIN. The alternative hypothesis states that ΔCCI, ΔCCV, ΔRCPI, ΔEXR, ΔUNE, ΔGDP and FIN *do not* homogenously cause visitors (VISI). Results are presented in table 5.

There appears to be a two way relationship between cultural consumption (ΔCCV) or Hallyu and visitors (ΔVISI). This can be explained in the following way. Tourists who have already visited Korea will probably spend more money in Korean cultural products which will perhaps increase their desire to visit Korea again in the future. Those who have never visited Korea in the past will get to familiarise themselves with the country through its cultural products and perhaps visit the country in the future to further enhance their understanding of the country and ‘quench their thirst’ for Korea. This relationship can be conceptualised as a circle where one variable feeds into the other. Our IRFs indicated a consistent positive reaction to ΔVISI as a result of a shock in ΔCCV. Even though IRFs are designed to measure the impact of a shock its duration and rate of decay, they also provide support to the results obtained here.

There appears to be a two way relationship between relative consumer price index (RCPI) and visitors. Obviously higher (lower) prices in Korea compared to country of origin will make it a less (more) attractive destination and reduce (increase) arrivals. This is easy to conceptualize. Lee (2013) finds that the relative CPI is a significant variable for Korean inbound tourism from Japan, USA, UK and Hong-Kong. Chang et al (2012) find that price competitiveness is important for tourism demand for Korea in the long run for Thai tourists. Those two studies support our findings of RCPI Granger causing visitors. Of course our results also show that arrivals/visitors Granger cause CPI as well. It makes sense that a greater number of tourists will push prices up since a greater number of people will be chasing a fixed amount of goods and services. Demand exceeds supply and this pushes prices up.

The effect that EXR has on arrivals/visitors is significant. The probability we obtain is 0.0548. Exchange rate can affect tourist arrivals even though our IRFs results are mixed regarding the effect and intensity. Kah & Lee (2013) show that a depreciation of the Japanese Yen has made it more expensive for Japanese tourists to travel to Korea. Visitors do not homogenously Granger cause EXR. Even though it makes sense to believe that demand for a specific currency will push the price up for that currency, the impact on price of a currency that demand from tourists has is reduced. The price of each currency is determined by other more important factors that relate mostly to industrial production and purchase of materials including oil and of course investment.

The relationship between arrivals and unemployment (UNE) is much simpler to explain. Arrivals/visitors do not homogenously Granger cause unemployment and this makes perfect sense since UNE is unemployment in the country of visitors, not Korea. The probability is 0.81. However the alternative ‘UNE does not homogenously cause VISI’ is rejected indicating that unemployment in the country of visitors does affect arrivals to Korea from that specific country. The probability is 0.02. Overall the results obtained here provide support to results obtained by looking at individual countries.

Now looking at the three remaining variables: i) GDP, ii) sentiment captured by consumer confidence index (CCI) and iii) mood captured by financial indexes returns (FIN), our causality tests show that there is no causality in any direction. Our IRFs for the effect of GDP on tourist arrivals indicated a short term impact that dies out quite fast. IRFs results for financial indexes returns provided a mixed short term impact while for CCI were inconsistent. Of course IRFs and causality tests are designed to study different effects, so one technique does not necessarily imply similar results for the other.

To summarize results obtained from both IRFs and causality tests are along the same line. The effect of some variables such as CCV and UNE is indisputable while for others such as CCI (sentiment) is very weak. Causality for relative consumer price index (RCPI) is bidirectional while for exchange rate (EXR) is unidirectional. The exchange rate affects arrivals. Manipulation of EXR and RCPI in order to attract more visitors would require intervention in international FX markets and changes in the mix of macroeconomic policies by the Korean government. Perhaps it would be easier to manipulate CCV by reinforcing the phenomenon in order to increase arrivals.

Conclusion

Tooke and Baker (1996) look into the effect of movies in tourist arrivals adopting a static before/after approach. In their conclusion they state that research could make possible the construction of an operational model to estimate the effects (both in terms of visitor numbers and spending and on inbound tourism) of deciding to use a particular location for filming. Such a model could be used to calculate the potential value and the costs of a movie or a television series to the proposed location and to the country. This suggestion inspired us to look into econometric models (both overtime and in the cross section, not static) that investigate the effect of Hallyu (which encompasses movies, music, language, fashion etc and not just films) and other variables on arrivals.

First we investigate the impact that random shocks have on short term arrivals in Korea in terms of intensity and duration employing impulse response functions (IRFs). We use a number of macroeconomic variables (GDP, UNE, EXR, RCPI) as well as variables that capture mood (financial indexes returns, FIN), sentiment (consumer confidence index, CCI) and most importantly a new variable that captures the effect that ‘Hallyu‘ has on tourist arrivals in Korea over time. ‘Hallyu’ can be seen as a pull factor. All our variables are orthogonalised. To the best of our knowledge this is the very first study that quantifies the effect of ‘Hallyu’ to be used in a time series (using IRFs) and panel data (using D-H) study. The impulse response function graphs allow us to visualize the effect of each variable on arrivals within twelve months and assess the extent to which each variable from each country poses a risk for Korean tourism.

Secondly we broaden our outlook and investigate causalities between our variables and tourist arrivals/visitors employing the D-H (2012) non homogenous Granger causality panel data approach. This allows us to obtain a more general picture of possible systemic interactions between visitors and our variables. A good understanding of possible systemic interactions would help Korean authorities to determine their long term strategy and policies.

Thirdly the ‘Hallyu’ phenomenon adds extra value to this study because it has never been examined in conjunction with other established macroeconomic variables as well as sentiment (consumer confidence index, CCI) and mood (financial indexes returns, FIN) which have recently been introduced in tourism literature as distinct aspects of the human psychosynthesis (Dragouni et al, 2017). Effectively we conduct a ‘horse race’ between all our variables. We are not aware of a similar phenomenon such as ‘Hallyu’ occurring in any other country therefore it is very difficult for this study to be replicated and we believe that it is exactly this characteristic that makes it unique. We believe that we add substantial value by quantifying ‘Hallyu’ to the best of our ability and data available to us and examine how it compares against established determinants.

Both techniques provide similar results. The ‘Hallyu’ phenomenon cannot be ignored. This is confirmed by both IRFs and D-H. There is a significant short term effect as indicated by IRFs but there is also bi-directional causality as shown by D-H. Even though we were not surprised by this finding we thought that its effect would not be so strong because it was competing against well established macroeconomic variables/determinants as well as sentiment (captured by confidence index CCI) and mood (captured by financial indexes returns or FIN). Some variables from specific countries appear to have a more intense impact on arrivals compared to others. For example the effects of unemployment on short term arrivals are more country specific and have a varying effect while Hallyu appears to have an impact on short term arrivals regardless of country. D-H causality test confirms a uni-directional effect from UNE to visitors for all countries. In contrast the effect of CCI (sentiment) is quite limited as shown both by IRFs and D-H. Gounopoulos et al (2012) also find that the consumer confidence index has no bearing on tourist arrivals in Greece. Croce (2016) with reference to tourism confidence index (TCI) stresses that accuracy gains vary greatly across regions and can hardly be generalised. Mood captured by financial indexes returns also has a limited effect confirmed by both IRFs and D-H. GDP appears to have an impact in the short run. The effect is short-lived. There is no causality from GDP to arrivals. In short there are two variables that stand out in terms of consistency namely CCV and unemployment. All our variables are orthogonalised, so we are observing the ‘net effect’ of each variable.

Generally speaking policy makers should consider variables both at country level (idiosyncratic) and overall (systemic) before deciding on policies to be implemented however some general conclusions can be drawn. Firstly variables that capture ‘Hallyu’ pull-type phenomena (if possible to be quantified) should be included in quantitative analysis because they can add value and prove useful in assessing the impact and risk that popular destinations face. This is not going to be an easy task for researchers in the area of tourism. Secondly Korean authorities should reinforce the Hallyu phenomenon by ‘resurrecting’ the national branding council as discussed in the literature review even though it has achieved its primary objective. Tooke & Baker (1996) suggest that a subsidy might be justified to encourage film companies to choose locations which display attractive national landscapes. Taking onboard this suggestion, the Korean national branding council could introduce a subsidy system that would encompass all areas of Hallyu (movies, music, language, fashion etc and not only for film companies as suggested by Tooke and Baker) so as to magnify the effect. The national branding council could be solely responsible for initiating and managing the subsidy scheme. If they do not take action they may observe a further decrease in the contribution that tourism has on their GDP given the existing downward trend. Korea is a highly industrialised country and its economy relies heavily on exports (cars, electronics, etc) and it is highly vulnerable to protectionism, tariffs and quotas. The last year following Brexit and US elections there has been lots of discussion of reintroducing protectionism. This could have a serious impact on the Korean economy which is export led (Jones, C (2016) and Allen, K (2016)). Korea is already suffering reduced exports as a result of protectionism. Currently there are 184 restrictions on Korean products, up from 159 a year earlier, according to figures from the Ministry of Trade, Industry and Energy. (Kim, 2016). In order to reduce risk and keep other avenues open, the Korean government should reinforce Hallyu and consequently tourism in case protectionism becomes harsher.

Unemployment in visitor countries is also an important tourism determinant but the Korean government has no way of controlling the effect of this. EXR and RCPI as indicated by causality tests have an effect but manipulating the EXR could be difficult especially if it requires constant intervention in the FX market. Inflation and consequently RCPI is easier to tame but this would require fiscal and monetary interventions. It seems that any improvement in tourist arrivals which does not require changes in economic policy (monetary, fiscal and intervention in FX market) depends on Hallyu. Korean authorities need to ride the Korean wave[[6]](#footnote-6) and take advantage of the present momentum.

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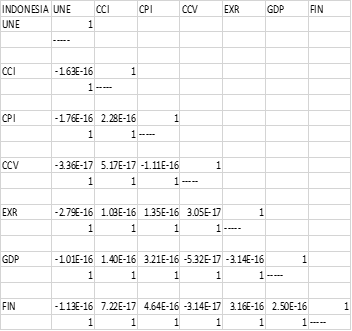
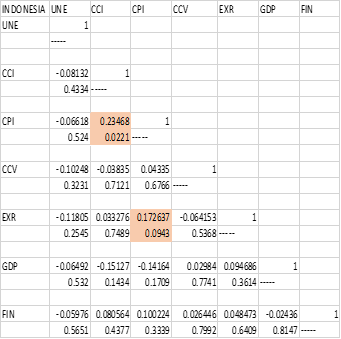
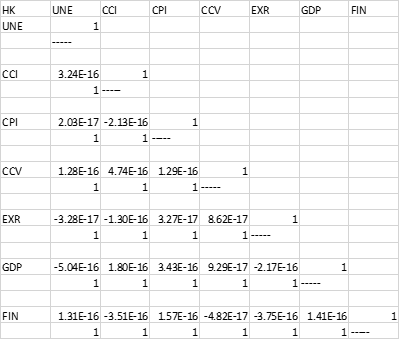
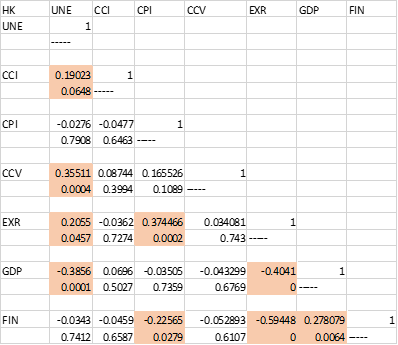
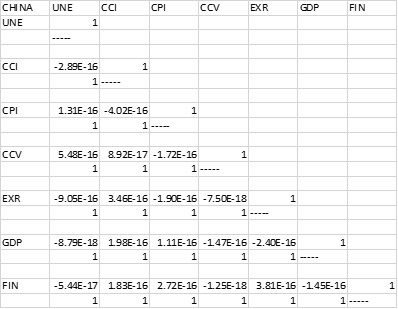
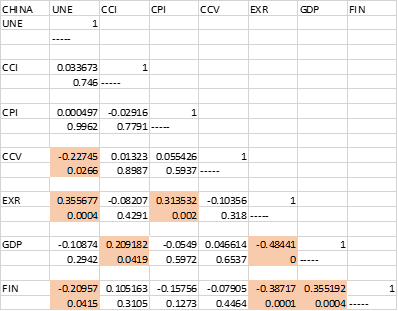
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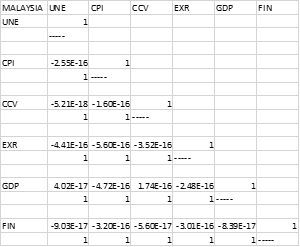
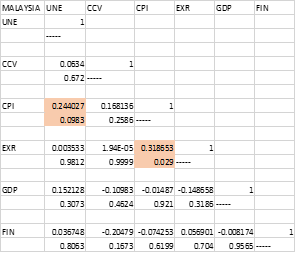
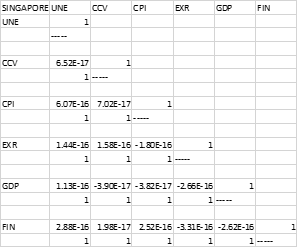
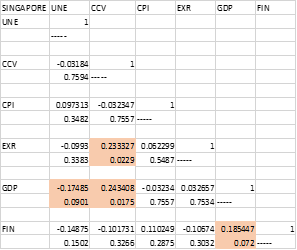
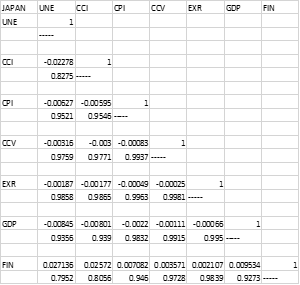
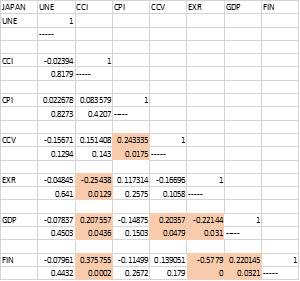
Table 1: Descriptive Statistics

The table shows mean value, standard deviation, minimum value and maximum value for all variables. UNE indicates unemployment rate, CCI is for consumer confidence index (sentiment), CPI is relative consumer price index, CCV is cultural consumption per visitor, EXR is the exchange rate, GDP is gross domestic production, and FIN is financial indexes returns and captures mood.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CHINA | | | | | | | |
|  | UNE | CCI | CPI | CCV | EXR | GDP | FIN |
| MEAN | -0.0221 | -0.0587 | -0.0261 | 3.9801 | 0.3909 | -0.0374 | 0.0098 |
| S.D. | 0.7692 | 2.0400 | 0.6150 | 41.4469 | 3.0664 | 0.2715 | 0.0925 |
| MIN | -2.5018 | -5.1756 | -2.1686 | -50.0650 | -7.7605 | -0.6000 | -0.2463 |
| MAX | 4.6736 | 8.0321 | 1.6439 | 348.1944 | 16.8831 | 0.6000 | 0.2745 |
| HONG KONG | | | | | | | |
|  | UNE | CCI | CPI | CCV | EXR | GDP | FIN |
| MEAN | -0.4493 | -0.2726 | -0.0392 | 7.2482 | 0.0780 | -0.0407 | 0.0064 |
| S.D. | 3.5156 | 4.4657 | 1.0808 | 50.4298 | 3.1651 | 0.5635 | 0.0677 |
| MIN | -8.5714 | -21.6000 | -3.1507 | -49.2708 | -7.9611 | -1.2700 | -0.2247 |
| MAX | 12.1951 | 19.4978 | 2.7946 | 354.0173 | 16.4565 | 1.3650 | 0.1707 |
| JAPAN | | | | | | | |
|  | UNE | CCI | CPI | CCV | EXR | GDP | FIN |
| MEAN | -0.1305 | -0.0685 | 0.2214 | 5.2527 | 0.5018 | 0.0022 | 0.0018 |
| S.D. | 3.2469 | 3.9823 | 0.3609 | 38.5805 | 4.3486 | 0.5127 | 0.0645 |
| MIN | -6.8182 | -12.3596 | -0.4703 | -63.4932 | -8.8713 | -1.2575 | -0.2159 |
| MAX | 10.0000 | 12.3636 | 1.2898 | 301.2085 | 24.5075 | 1.5275 | 0.2103 |
| TAIWAN | | | | | | | |
|  | UNE | CCI | CPI | CCV | EXR | GDP | FIN |
| MEAN | 0.0645 | 0.1252 | 0.1238 | 6.3420 | 0.3096 | -0.0298 | 0.0043 |
| S.D. | 1.9115 | 3.3277 | 0.8446 | 49.8987 | 2.5598 | 0.8005 | 0.0628 |
| MIN | -3.8674 | -10.4848 | -1.8958 | -87.0698 | -6.7912 | -1.7000 | -0.1728 |
| MAX | 8.6207 | 10.8821 | 2.2831 | 445.0708 | 12.2866 | 2.5700 | 0.1925 |
| INDONESIA | | | | | | | |
|  | UNE | CCI | CPI | CCV | EXR | GDP | FIN |
| MEAN | -0.5266 | 0.3437 | -0.2447 | 15.7332 | -0.3864 | 0.0037 | 0.0159 |
| S.D. | 1.8042 | 3.2643 | 0.5507 | 132.7061 | 2.5595 | 0.1799 | 0.0716 |
| MIN | -7.8148 | -7.2588 | -2.7231 | -77.2520 | -10.6059 | -0.5875 | -0.2525 |
| MAX | 4.6921 | 8.7698 | 0.7053 | 1247.0860 | 8.6304 | 0.3750 | 0.1918 |
| SINGAPORE | | | | | | | |
|  | UNE |  | CPI | CCV | EXR | GDP | FIN |
| MEAN | -0.0910 |  | -0.0361 | 39.5511 | 0.3519 | -0.0331 | 0.0045 |
| S.D. | 6.2776 |  | 0.6450 | 281.7608 | 2.2699 | 1.0048 | 0.0619 |
| MIN | -30.3030 |  | -1.5933 | -51.3435 | -5.7053 | -2.0550 | -0.2650 |
| MAX | 18.5185 |  | 1.8330 | 2606.2430 | 11.5163 | 2.8975 | 0.2113 |
| MALAYSIA | | | | | | | |
|  | UNE |  | CPI | CCV | EXR | GDP | FIN |
| MEAN | 0.3371 |  | -0.0058 | 5.8592 | -0.0708 | 0.0154 | 0.0082 |
| S.D. | 9.0237 |  | 0.3225 | 56.8088 | 1.6935 | 0.7815 | 0.0276 |
| MIN | -20.5882 |  | -0.6920 | -41.6717 | -3.3716 | -0.9475 | -0.0642 |
| MAX | 17.8571 |  | 0.6972 | 264.8596 | 3.5556 | 2.7725 | 0.0705 |

Table 2: We present correlations before and after orthogonalisation for all countries. The first table presents correlations before orthogonalization. The second table presents correlations after orthogonalization. The first number in each cell of the tables represents correlation and right underneath we present p-values. Significant correlations are highlighted in red. p=1 means no correlation.





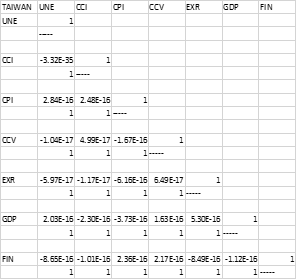
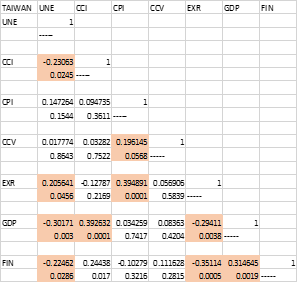


Table 3: Stationarity

Table 3 shows results from Phillips-Peron tests. VISI is total visitors from country or origin, CCI is consumer confidence index (sentiment), CCV is cultural consumption per visitor, CPI is relative consumer price index, EXR is exchange rate, UNE is unemployment, GDP is gross domestic production, and FIN is financial indexes returns (captures mood). FIN is already stationary. Ho: unit root. We report t-statistics and p-value is in ( ). We present results only after taking first differences to keep the volume of tables to a minimum.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Stationary test after first difference | | | | | | | | |
| Country | VISI | CCI | CCV | CPI | EXR | UNE | GDP | FIN |
| China | -12.4533  (0.0001) | -10.6598  (0.0000) | -10.3394  (0.0000) | -8.1623  (0.0000) | -7.1588  (0.0000) | -10.8014  (0.0000) | -4.0529  (0.0018) | -8.8853  (0.0000) |
| Hong Kong | -80.4921  (0.0001) | -9.8361  (0.0000) | -12.3976  (0.0001) | -10.3551  (0.0000) | -6.1537  (0.0000) | -6.3104  (0.0000) | -3.6926  (0.0057) | -8.5875  (0.0000) |
| Japan | -52.8472  (0.0001) | -8.0014  (0.0000) | -10.2083  (0.0000) | -8.0293  (0.0000) | -8.9507  (0.0000) | -10.2078  (0.0000) | -4.0539  (0.0018) | -8.3858  (0.0000) |
| Taiwan | -14.2944  (0.0001) | -11.7487  (0.0001) | -10.4800  (0.0000) | -10.5520  (0.0000) | -7.7813  (0.0000) | -4.1258  (0.0014) | -3.6487  (0.0065) | -8.5387  (0.0000) |
| Indonesia | -8.0774  (0.0000) | -8.0018  (0.0000) | -10.2062  (0.0000) | -6.2984  (0.0000) | -8.1581  (0.0000) | -10.6158  (0.0000) | -3.6117  (0.0072) | -8.0645  (0.0000) |
| Singapore | -18.0540  (0.0001) |  | -10.9979  (0.0000) | -11.6573  (0.0001) | -6.9177  (0.0000) | -10.3202  (0.0000) | -4.4486  (0.0005) | -8.0346  (0.0000) |
| Malaysia | -12.3407  (0.0000) |  | -18.7219  (0.0001) | -5.2026  (0.0001) | -4.1828  (0.0019) | -13.7297  (0.0000) | -4.2316  (0.0016) | -7.6503  (0.0000) |

Table 4: VAR estimation

∆VISI is the change in total tourism arrivals/visitors to Korea, ∆UNE is the change in unemployment rate, ∆RCPI is the change in relative consumer price index (Korea/country of origin), ∆CCI is changes in consumer confidence index (sentiment), ∆EXR is changes in the exchange rate, ∆CCV is changes in cultural consumption per visitor, ∆GDP is changes in gross domestic product, and FIN is financial indexes returns (mood). All explanatory variables are orthogonalized. The optimal number of lags is selected based on the Akaike Information Criterion. P-value is in ( ). We present only coefficients which are significant to keep output as small as possible.

|  |  |
| --- | --- |
| China | = 0.0321ΔCCV(t-2) - 0.0265ΔCCV(t-3) + 0.9554ΔUNE(t-5) - 1.1251ΔUNE(t-9) - 0.1949ΔRCPI(t-2)  (0.0970) (0.0625) (0.0747) (0.0404) (0.0042)  - 0.1242ΔRCPI(t-5) +0.1253ΔRCPI(t-6) - 0.2255ΔRCPI(t-7) - 0.1333ΔRCPI(t-9) + 0.0013EXR(t-6)  (0.0344) (0.0356) (0.0050) (0.0432) (0.0832)  - 0.0012ΔEXR(t-8) -0.0351ΔGDP(t-6) - 0.0542ΔGDP(t-8) + 0.5051FIN(t-6) - 0.8052FIN(t-7)  (0.0618) (0.0690) (0.0022) (0.0375) (0.0088)  + 1.2511FIN(t-8) - 0.6293FIN(t-9) + 0.4679ΔVISI(t-1) - 0.6274ΔVISI(t-2) - 0.6929ΔVISI(t-5)  (0.0001) (0.0314) (0.0569) (0.0051) (0.0020)  +0.7443ΔVISI(t-6) - 0.6143ΔVISI(t-7) + 0.0752ΔVISI(t-9)  (0.0079) (0.0091) (0.0472) |
| Hong Kong | = - 0.0163ΔUNE(t-3) + 0.0624ΔRCPI(t-2) + 0.0115ΔCCI(t-3) - 0.0352ΔEXR(t-1) + 0.0344ΔEXR(t-2)  (0.0935) (0.0158) (0.0574) (0.0018) (0.0051)  - 1.4577ΔFIN(t-2) + 0.9814ΔFIN(t-3) - 0.8495ΔVISI(t-1) - 0.4732ΔVISI(t-2) - 0.3955ΔVISI(t-3)  (0.0020) (0.0348) (0.0000) (0.0021) (0.0020) |
| Indonesia | = - 0.007ΔCCV(t-2) - 0.0007ΔCCV(t-5) + 0.0007ΔCCV(t-8) + 0.0574ΔUNE(t-6) - 0.0905ΔUNE(t-7)  (0.0934) (0.0206) (0.0082) (0.0426) (0.0027)  + 0.4291ΔRCPI(t-4) - 0.2682ΔRCPI(t-5) + 0.2941ΔRCPI(t-7) - 0.0395ΔCCI(t-1) + 0.0305ΔCCI(t-2)  (0.0023) (0.0837) (0.0931) (0.0455) (0.0716)  - 0.0308ΔCCI(t-3) - 0.0378ΔCCI(t-4) + 0.0446ΔCCI(t-5) - 0.0647ΔCCI(t-7) - 0.0493ΔEXR(t-8)  (0.0671) (0.0166) (0.0151) (0.0021) (0.0439)  + 2.2291ΔGDP(t-8) - 1.7904ΔGDP(t-9) + 2.2454FIN(t-5) - 2.4288FIN(t-6) - 0.5191FIN(t-9)  (0.0027) (0.0020) (0.0059) (0.0121) (0.0156)  - 0.7309ΔVISI(t-1) - 0.8005ΔVISI(t-2)  (0.0042) (0.0174) |
| Japan | = 0.0012ΔCCV(t-2) - 0.0016ΔCCV(t-4) + 0.0143ΔUNE(t-9) + 0.2060ΔRCPI(t-7) + 0.2806ΔRCPI(t-9)  (0.0738) (0.0377) (0.0840) (0.0179) (0.0002)  - 0.0467ΔCCI(t-9) + 0.0303ΔEXR(t-5) + 1.4714FIN(t-4) + 1.2743FIN(t-9) - 0.4205ΔVISI(t-2)  (0.0391) (0.0465) (0.0901) (0.0538) (0.0096)  - 0.4775ΔVISI(t-9)  (0.0673) |
| Taiwan | = 0.0012ΔCCV(t-2) + 0.0010ΔCCV(t-5) + 0.0016ΔCCV(t-6) - 0.0499ΔUNE(t-2) + 0.0794ΔUNE(t-3)  (0.0430) (0.0736) (0.0083) (0.0456) (0.0012)  - 0.0506ΔUNE(t-6) + 0.1032ΔRCPI(t-5) - 0.0206ΔCCI(t-5) + 0.1731ΔGDP(t-2) - 0.1248ΔGAP(t-9)  (0.0239) (0.0033) (0.0920) (0.0522) (0.0404)  - 0.4205ΔVISI(t-2) - 0.4775ΔVISI(t-9)  (0.0266) (0.0129) |
| Singapore | = 0.0004ΔCCV(t-3) - 0.0144ΔUNE(t-4) + 0.0194ΔUNE(t-6) - 0.1871ΔRCPI(t-5) - 0.3399ΔRCPI(t-5)  (0.0573) (0.0904) (0.0214) (0.0124) (0.0000)  - 0.1791ΔRCPI(t-6) - 0.0838ΔEXR(t-6) + 0.1928ΔGDP(t-1) + 0.3286ΔGDP(t-4) - 0.2256ΔGDP(t-6)  (0.0529) (0.0057) (0.0301) (0.0031) (0.0052)  - 1.9907FIN(t-6) - 0.6092ΔVISI(t-1) - 0.3778ΔVISI(t-2) - 0.3188ΔVISI(t-3) - 0.5218ΔVISI(t-4)  (0.0176) (0.0002) (0.0378) (0.0591) (0.0027)  - 0.7435ΔVISI(t-5)  (0.0000) |
| Malaysia | = 0.0033ΔCCV(t-1) - 0.0369ΔUNE(t-1) - 0.0286ΔUNE(t-2) + 0.5712ΔRCPI(t-3) - 0.123ΔEXR(t-1)  (0.0360) (0.0000) (0.0084) (0.0015) (0.0002)  + 0.0997ΔEXR(t-2) + 0.5572ΔGDP(t-1) - 0.7427ΔGDP(t-2) - 3.8356FIN(t-1) + 5.3400FIN(t-2)  (0.0046) (0.0000) (0.0046) (0.0000) (0.0000)  - 3.9282FIN(t-4) - 0.7648ΔVISI(t-2) - 0.7644ΔVISI(t-3)  (0.0032) (0.0001) (0.0155) |

Table 5: Pairwise Dumitrescu-Hurlin Panel Causality Tests

The table shows results of the Dumitrescu-Hurlin (2012) panel Granger causality tests. ∆VISI is the change in total tourism arrivals/visitors to Korea, ∆UNE is the change in unemployment rate, ∆RCPI is the change in relative consumer price index (Korea/country of origin), ∆CCI is changes in consumer confidence index (sentiment), ∆EXR is changes in the exchange rate, ∆CCV is changes in cultural consumption per visitor, ∆GDP is changes in gross domestic product, and FIN is financial indexes returns (mood). All explanatory variables are orthogonalized.

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Dumitrescu-Hurlin Panel Causality Tests | | | |
| Null Hypothesis | W-Statistics | Z bar-Statistics | Probability |
| VISI does not homogeneously cause CCI  CCI does not homogeneously cause VISI | 2.1921  2.3998 | 0.1554  0.3771 | 0.8765  0.7061 |
| VISI does not homogeneously cause CCV  CCV does not homogeneously cause VISI | 6.1732  4.4217 | 4.4053  2.5355 | 0.0000  0.0112 |
| VISI does not homogeneously cause RCPI  RCPI does not homogeneously cause VISI | 5.2781  5.5348 | 3.4496  3.7237 | 0.0006  0.0002 |
| VISI does not homogeneously cause EXR  EXR does not homogeneously cause VISI | 1.4047  1.8451 | -0.6850  1.9201 | 0.4933  0.0548 |
| VISI does not homogeneously cause UNE  UNE does not homogeneously cause VISI | 1.5377  4.2172 | -0.5431  2.3172 | 0.5871  0.0205 |
| VISI does not homogeneously cause GDP  GDP does not homogeneously cause VISI | 2.5131  0.8295 | 0.4981  -1.2991 | 0.6184  0.1939 |
| VISI does not homogeneously cause FIN  FIN does not homogeneously cause VISI | 2.9245  1.6467 | 0.9372  -0.4267 | 0.3486  0.6696 |

Figure 1: ‘% of arrivals of our sample countries relative to world arrivals

This figure presents percentage changes in tourist arrivals/visitors from our sample countries relative to world arrivals/visitors.

Figure 2: Total arrivals (in absolute values) from the whole world and from sample countries.

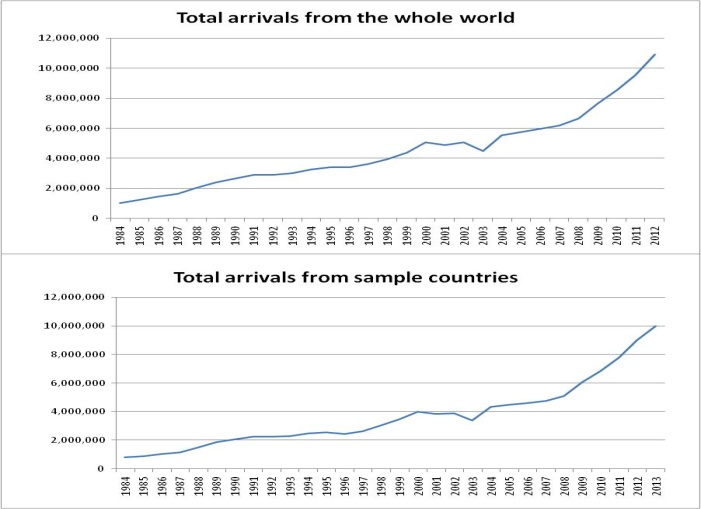


Figure 3 Percentage changes in Tourist arrivals/visitors from individual countries

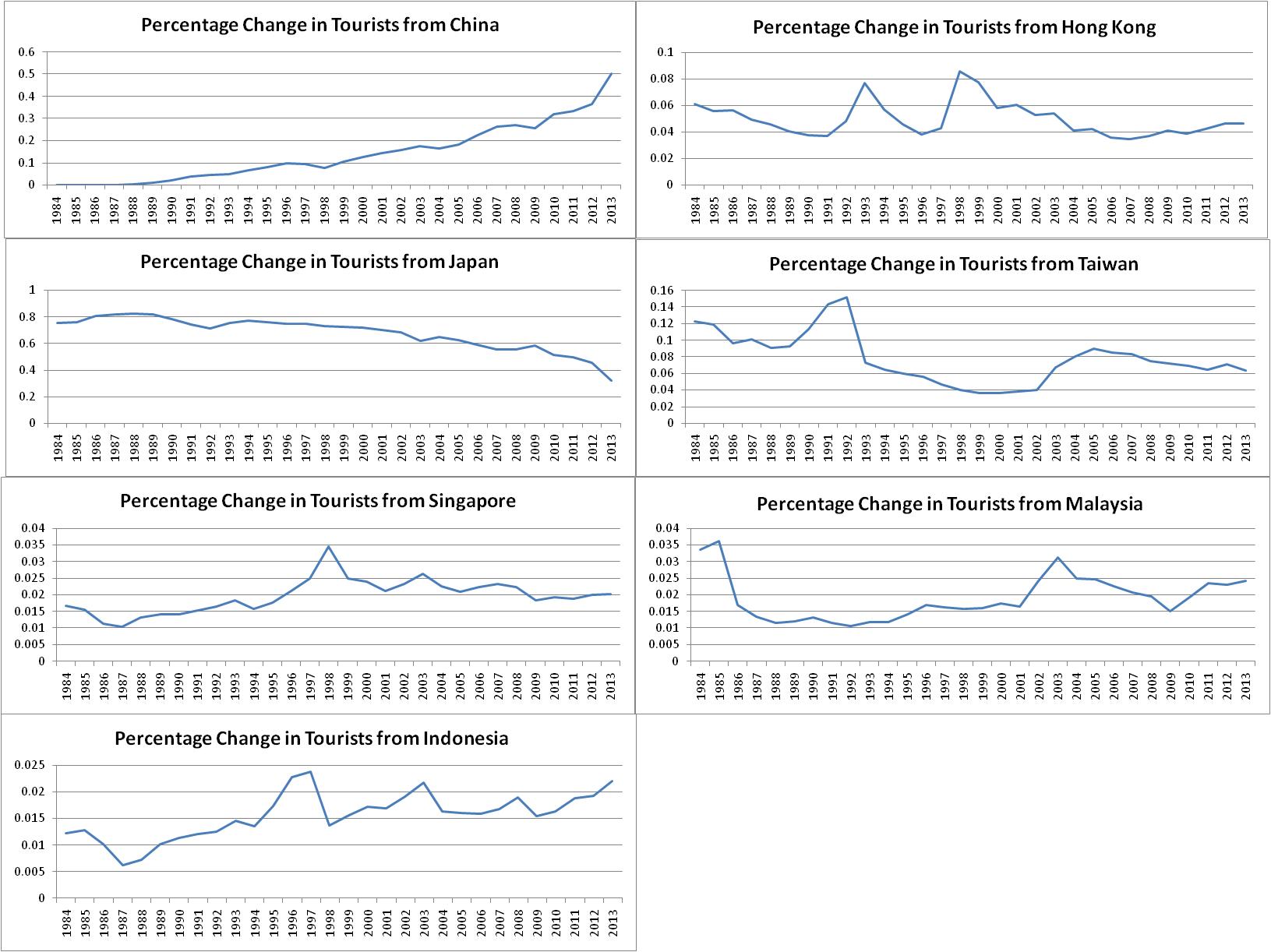


Figure 4: Impulse Response Analysis (Response to Cholesky One SD. Innovations ±2 S.E.)















1. In their paper they make a distinction between mood and sentiment, as we do. [↑](#footnote-ref-1)
2. For example if there is an one-way causal relationship running from exchange rate to visitors then it is in the interest of the Korean authorities to keep the Korean Won as low as possible to reinforce tourism. Country specific regressions or IRFs may provide different results for the effect of a cheap Won on visitors from different countries but causalities for all countries will help Korean authorities determine and pursue a basic strategy. [↑](#footnote-ref-2)
3. The index is based on 6 dimensions one of which is tourism. [↑](#footnote-ref-3)
4. Perhaps the Korean authorities should consider resurrecting the presidential council on nation branding which does not exist any more. [↑](#footnote-ref-4)
5. GDP is available quarterly. In order to include it in our sample which is monthly, we divide changes in GDP equally between the 3 months in each period. [↑](#footnote-ref-5)
6. We are not aware of Hallyu type phenomena in other countries but if present somewhere else besides Korea, new research could assess the impact of such phenomena on each country separately as well as simultaneously following the techniques applied here. [↑](#footnote-ref-6)