

# DECOUPLING BETWEEN CHINA AND ADVANCED ECONOMIES

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## 1.1 Introduction

In the past twenty years, China has made impressive strides at transforming its economy. From a starting point of low economic growth and high poverty levels to average GDP growth rates of ten per cent a year, China has over the past decade taken centre stage in the global economy and is considered by analysts such as Subramanian (2011) to be an “inevitable superpower”. As that power has been called into question with a hard landing looming on the horizon, ever more attention is paid to the role that China plays in the global economy.

Since the economic policies in China are embedded in a centralised decision model, the question is to what extent its business cycle is in tandem with the world business cycle, which is advertently shaped by the advanced economies’ business cycles. The increased participation and perceived dominance of China in the world economy lead to the question to what extent the Chinese economy and per definition its business cycle has become integrated with that of advanced economies. Does the Chinese business cycle comove with advanced countries’ business cycles? This question gained particular attention especially around the time of the 2008 credit crunch. What had started as an advanced crisis soon became global, and the response from and impact on emerging markets in general and China in particular were under the spotlight. The notion took hold that some emerging economies had decoupled from the business cycle of advanced economies during and immediately after the crisis. Within this debate, China, as a very large emerging market, warrants special attention.

The paper is structured as follows: The first part covers a literature overview of more recent studies on the comovement between China and other economies. This is followed by the data used and method applied. The paper uses dynamic factor analysis to analyse the question of possible decoupling between advanced business

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cycles and China, using quarterly data spanning 1979Q3 to 2011Q2. This period is further divided into sub-decades, which allows a nuanced view on the evolution of China's business cycle comovement. In addition to the conclusion drawn from the factor analysis, ten year rolling regressions are applied to gain a deeper insight into the relationship between China and various advanced economies over time.

The paper concludes that though China had displayed dynamic growth in the decades preceding the crisis, the analysis shows that the Chinese business cycle had not decoupled. Instead, China's business cycle has gradually coupled to that of advanced economies.

## **1.2 Literature review: Comovement between China and other economies**

As China's position in the global economy has become more prominent, so too has the need to understand the possible implications that Chinese growth could have on the rest of the world. It has also become important to understand the impact that growth in other countries could have on China. This section provides an overview of literature available on the topic. The focus is on studies published between 2000 and 2014, in order to provide a background picture of China's integration into the global economy in the years leading up to the financial crisis.

In general, studies done on Chinese comovement have been quite diverse. China's importance in global commodity markets and as a trading partner has been investigated. The findings confirm that China has been an important roleplayer in commodities, with oil exporting countries in particular being vulnerable to changes in Chinese demand (Cashin, Mohaddes, Raissi & Raissi, 2012). As a trading partner to many major advanced economies, Chinese demand is also increasingly influencing Latin American countries indirectly. In other words, Chinese demand shocks are transmitted to Latin America via the US, with whom these countries have close trading relations (Cesa-Bianchi, Pesaran, Rebucci, Xu & Chang, 2012). Globally, Ahuja and Nabar (2012) estimate that a one percentage point decrease in Chinese investment will cause a reduction of global growth by one-tenth of a percentage point.

Other studies have focused more intensely on comovement between China and specific trading partners or regions. The GDP of the US and the Eurozone are found to be negatively influenced by contractions in Chinese demand (Cashin *et al.*, 2012;

Dreger and Zhang, 2011), and that this is mostly due to common shocks between the Chinese and US economies (Jia & Sinclair, 2009). Business cycle synchronisation has thus increased between China, the US and the EU (Leduc & Spiegel, 2013; Lam & Yetman, 2013). It is not just advanced economies that are increasingly reacting to Chinese demand, however. US and European output shocks influence Chinese output, as well (Kim, Lee & Park, 2011; N'Diaye, Zhang & Zhang, 2010). Fidrmuc, Korhonen and Batorova (2013) show that certain individual economies display higher levels of business cycle correlation with China than others. For example, Korea, the US, Japan and Australia display high levels of business cycle correlation with China. For economies such as Korea and Japan, regional proximity to China is likely a very important factor. A number of studies support the idea that China is an important driver of business cycle comovement in East Asia (Haltmaier, Ahmed, Coulibaly, Knippenberg, Leduc, Marazzi & Wilson, 2007; Ma, Van Assche & Hong, 2009; Arora and Vamvakidis, 2010; Allegret & Essaadi, 2011) .

China's integration with the global economy has meant not only that synchronisation with other East Asian economies has increased. Business cycles between China and other emerging markets such as India and those in Latin America are becoming increasingly synchronised, too (Calderón, 2007). This is mainly due to China's prominence as a trading partner. South African output, as well as that of Brazil and Russia, show significant reactions to export shocks from China (Çakir & Kabundi, 2013). Table 1.1 below summarises this literature review.

**Table 1.1: Literature on Chinese comovement**

<b>Authors</b>	<b>Period covered</b>	<b>Method Used</b>	<b>Main conclusion</b>
Ahuja & Nabar (2012)	2002-2011	Regression analysis	Chinese investment has significant spillovers on global growth.
Allegret and Essaadi (2011)	1975-2007	Time varying coherence functions	China transmits US shocks to East Asian neighbours.
Arora & Vamvakidis (2010)	1960-2007	VAR and VECM	Chinese demand has become increasingly important for regional (Asian) growth as well as global growth.
Cakir & Kabundi (2013)	1995-2009	Dynamic factor analysis	South African output reacts positively to export shocks from China. Other so-called BRIS economies display similar patterns.
Calderon (2007)	1965-2004	Panel regressions	Chinese trade flows have served as impetus which synchronises business cycles between China, India and Latin America.
Cashin <i>et al.</i> (2012)	1979-2009	GVAR	Commodity exporters are particularly vulnerable to Chinese demand shocks.
Cesa-Bianchi <i>et al.</i> (2012)	1979-2009	GVAR	The US has become less important in explaining Latin American output fluctuations, while China has become more important.
Dreger & Zhang (2011)	1979-2009	GVAR	Chinese demand shocks have substantial impacts on the US, the Eurozone and Japan.
Fidrmuc, Korhonen & Batorova (2013)	1992-2006	Dynamic correlation analysis	Countries such as Japan, Korea and the US which trade intensely with China show higher correlations with the Chinese business cycle than most European countries.
Haltmaier <i>et al.</i> (2007)	1993-2006	VAR	Chinese trade has been an important determinant in East Asian growth.
Jia & Sinclair (2009)	1978 -2009	Two-series correlated unobserved components model	About half of the output fluctuations observed between the US and China can be ascribed to common shocks.
Jia & Sinclair (2010)	1978 -2009	Two-series correlated unobserved components model	When using OECD and G7 aggregates as proxies for the advanced world, Chinese output does not share common factors. China is more sensitive to the US in particular than advanced countries in general.
Kim, Lee and Park (2011)	2001-2007	VAR	Relationships between China, the US and EU are interdependent: US and EU shocks positively influence Chinese output, and vice versa.
Leduc and Spiegel (2013)	1997-2012	Two-year rolling correlations	Chinese business cycle correlations with the EU and US have intensified, while decreasing with other East Asian economies.
Ma & Van Assche, 2009	1997-2005	Gravity models	Chinese trade has been a more important determinant of East Asian growth than US growth has.
N'Diaye, Zhang & Zhang (2010)		GIMF	Changes in US demand have a significant impact on Chinese output.

The available literature on China's real comovement with other economies, and impact on trading partners, shows increasing global interdependence where China is often a driving force, especially in the East Asian region. Moreover, China's prominence as a global trading partner has caused the importance of Chinese demand to increase over time. These are to be expected given the level of trade that China partakes in globally and its importance as consumer in global commodity markets. In fact, China overtook the US to become the world's largest trader in January of 2014 (Bloomberg, 2014).

While the literature on China in general has expanded substantially as the Chinese economy becomes much more prominent worldwide, some important questions remain. In terms of the comovement between China and other economies, the focus on China's synchronisation with advanced economies has only become a pertinent issue in recent years and therefore not received as much attention. Many of the studies available in the literature therefore focus on China's impact on fellow BRIS economies or other emerging regions such as Latin America. Of the studies analysed in the literature which do pay attention to the issue of Chinese comovement with advanced economies, the advanced economies are restricted to a small subset of countries such as the US, Eurozone and Japan. Furthermore, few studies look at a time period which encompasses the credit crunch years, often stopping in 2007 or 2009, when it can be argued much of the after-effects of the credit crunch were still playing out. This paper aims to fill this gap with the subsequent empirical analysis.

### **1.3. Model**

The dynamic factor model is based on the idea that variance in time-series variables are driven by a few latent factors ( $r$ ), which we can call a common component. Comovement or variance in the variables can also be influenced by certain features are specific to individual data series, which can be called an idiosyncratic component.

Therefore, we can represent a vector of time series  $Y_t = (y_{1t}, y_{2t}, \dots, y_{Nt})'$  as the sum of a common component,  $X_t = (x_{1t}, x_{2t} \dots x_{Nt})'$  and an idiosyncratic component,  $e_t = (\varepsilon_{1t}, \varepsilon_{2t} \dots \varepsilon_{Nt})'$

This gives:

$$Y_t = X_t + e_t$$

$$Y_t = \Lambda F_t + e_t \tag{1}$$

where  $X_t = \Lambda F_t$  represents the common component; the part of the series that depends on common factors,  $e_t$  represents the idiosyncratic component; that part of each series that is variable specific and orthogonal to the common component,  $\Lambda$  is the  $N \times r$  matrix of factor loadings; consisting of the non-zero columns of  $\Lambda$  and with  $r < N$ , and  $F_t$  represents the vector of  $r$  common factors.

Since  $T, N \rightarrow \infty$  the common components can be identified using principal component analysis for the variance-covariance matrix of the observable data,  $cov(Y_t)$ . The variance-covariance matrix is summarized by a dimension reduction matrix with  $N \times 1$  vector of eigenvalues from the variance-covariance matrix, wherein the first largest eigenvalues and vectors have been calculated so that:

$$X_t = VV'Y_t \tag{2}$$

Where  $V'$  representing the  $N \times r$  matrix of eigenvectors which correspond to the largest  $r$  eigenvalues of the correlation matrix for  $Y_t$ . The common factors,  $F_t$ , are estimated using principal component analysis and can be represented as:

$$F_t = V'Y_t \tag{3}$$

where  $V$  is an estimate of factor loadings equal to  $\Lambda$ . The idiosyncratic factors can therefore be defined as

$$e_t = X_t - Y_t \tag{4}$$

The number of factors to be estimated are determined using the approach proposed by Bai and Ng (2002).

### 1.3.1 Data

Dynamic factor analysis is applied to data for China and seventeen advanced economies: Australia, Austria, Belgium, Canada, Finland, France, Germany, Italy, Japan, Norway, Netherlands, New Zealand, Spain, Sweden, Switzerland, United Kingdom and United States. Quarterly data for real GDP, CPI, short term interest rates, imports, exports, exchange rates and business cycles are used. The oil price is included as a global variable. These data are therefore obtained from the GVAR

Toolbox and IMF’s International Financial Statistics. The resultant sample consists of 172 observations (N) over 128 quarters (T). The additional data was collected from the IMF’s IFS Database. Data are logged, except in the case of negative values. Stationarity is ensured by differencing where necessary, as indicated by the KPSS and DF-GLS tests.

## 1.4 Results

The dynamic factor analysis is done for different periods: An overall period and three sub-periods which are each about 40 quarters. This provides a decade-by-decade view on comovement.

### 1.4.1 Factor analysis for overall period: 1979Q3-2011Q2

Variance shares obtained from the factor analysis indicate the amount of variance in variables that can be ascribed to a common factor. Chinese variables in particular have very low variance shares and China can therefore be seen as decoupling from advanced economies in this overall period. Most variables with higher variance shares belong to advanced economies and are mostly trade-related variables (exchange rates and/or imports and exports). For simplification, a summary table of variance shares for real variables for China and the G7 are reported.

Table 1.2: Summary of results for major advanced economies and China, 1979Q3-2011Q2

	China	Canada	France	Germany	Italy	Japan	UK	USA
GDP	0.07	0.46	0.46	0.42	0.57	0.24	0.45	0.55
Exports	0.22	0.48	0.85	0.83	0.68	0.49	0.63	0.52
Imports	0.22	0.19	0.86	0.78	0.70	0.45	0.66	0.62
Business cycle	<b>0.09</b>	<b>0.53</b>	<b>0.57</b>	<b>0.49</b>	<b>0.78</b>	<b>0.42</b>	<b>0.54</b>	<b>0.59</b>

The variance share results show that China’s economic performance since the late 1970s has been dominated by idiosyncratic factors. Only 9 per cent of the Chinese business cycle between 1979 and 2011 has been explained by a common component, showing that factors such as domestic demand and policy have been more important in driving output in China. This makes sense given the fact that China’s economy operated under a system of so-called “state capitalism” (The Economist, 2012) for much of the time under investigation, with the true speeding up of globalization only happening in the 2000s, toward the latter part of this sample. The G7 countries represented here, on the other hand, show much higher levels of sensitivity to global events. Forty two per cent of the business cycle of

China's advanced neighbour, Japan, for instance was explained by common components in the same period.

According to the Bai-Ng criteria, the number of factors to be specified for this period is four<sup>2</sup>. These factors correspond to global trade, European/US exchange rates, advanced business cycles, and advanced inflation. The trade and exchange rate factors show that, though China has certainly become a very important trading partner in this overall period, trade by advanced economies was most responsible for driving comovement between 1979 and 2011. Advanced country business cycles were also important in driving comovement, confirming again the dominance of these economies during the period under investigation. Advanced inflation could be an important factor since increased inflation rates often prompt interest rate hikes. These interest rate changes in turn spur changes in exchange rates and asset prices that are important in driving comovement.

Given the low variance shares for Chinese variables in this overall period, the implication would be that China would not be very much influenced by events such as the global credit crunch that the world experienced in 2008. As mentioned earlier, though, China's globalization only really reached its zenith in 2001, while many changes had occurred in each decade since the announcement of the open door policy. The following sections therefore present a decade-by-decade look at comovement between China and advanced economies, using factor analysis again.

#### **1.4.2 Factor analysis results: 1979Q3-1990Q4**

China's eventual rise to second largest economy in the world began as a process of gradual liberalization. One of the most significant steps in this process started in 1978, when the country's so-called open door policy was instituted and gradual reforms started.

This first sub-period is therefore one in which it is expected that China's response to common components will still be minimal. Similarly, this period represents an era for advanced economies when policies might have been liberalized but globalization had not yet become the global force it currently is.

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<sup>2</sup> The amount of factors to be specified for this period are, according to the Bai-Ng criteria, four. Four factors are estimated in all subsequent sub-periods so that changes in factors and variance cannot be attributed to a change in the number of factors specified.

An analysis of the variance shares found for this sub-period confirms these expectations. Variance shares in general are low, with only a handful of advanced economy trade variables showing variance shares of 80 per cent or more.

**Table 1.3: Summary of results for major advanced economies and China, 1979Q3-1990Q4**

	China	Canada	France	Germany	Italy	Japan	UK	USA
GDP	0.49	0.57	0.51	0.29	0.53	0.17	0.54	0.53
Exports	0.08	0.44	0.78	0.72	0.45	0.43	0.45	0.30
Imports	0.15	0.43	0.83	0.78	0.44	0.34	0.45	0.50
Business cycle	<b>0.24</b>	<b>0.47</b>	<b>0.36</b>	<b>0.32</b>	<b>0.45</b>	<b>0.11</b>	<b>0.59</b>	<b>0.50</b>

It can be seen from the summary presented above that China's comovement with advanced economies was low during this sub-period, as would be expected since the country had only just embarked on its open door policy. Becker and Wang (2013) and Chen, Quan and Liu (2013) also find evidence that China's business cycle was mostly dominated by domestic economic policy up until the 2000s.

For advanced countries as well, variance shares are low, with only 50 per cent of the US business cycle explained by a common component. Given the low levels of globalization during this period, the results for advanced countries are not surprising. Comovement might have been low in this first sub-period, but the question still remains what exactly were the factors that were driving the levels of comovement that are to be seen.

Four factors are specified again. These are advanced country trade and inflation, US production, and Chinese short term interest rates. The fact that advanced trade and inflation emerges again as an explanatory factor emphasizes the important role that advanced countries played in trade and monetary events in the early 1980s, when China had not yet become the global player it currently is. The US production factor points to the importance of the US as the dominant world economy during this time. This sub-period comes shortly after the global economy had undergone two large oil price shocks and other economies might have been particularly sensitive to declines in US demand. The final factor, Chinese short term and lending rates, explains less of the comovement than the first three factors do. It shows that Chinese monetary policy was important during this time.

For this first sub-period then, idiosyncratic factors dominate comovement in China, as would be expected. This is likely due to the fact that China was still mostly a very closed and protected economy. While the general Open Door Policy had started to take hold in 1978; reform was gradual and it would not be until 2000 that the Chinese economy became fully integrated with the rest of the world.

#### 1.4.3 Factor analysis results: 1991Q1-2000Q4

It is during the 1990s that one would expect China's sensitivity to global events to increase, given increased globalization and stronger reforms in China. This expectation is confirmed by the variance shares obtained. Chinese variables still show low levels of comovement (as seen by their variance share), though up to 57 per cent of Chinese consumer inflation and 66 per cent of the Chinese business cycle can be attributed to a common component in this phase, which is significantly higher than the variance shares obtained for the previous sub-sample.

For advanced economies, variance shares increase as well. It is still mostly exchange rates and imports/exports that show variance shares of 80 per cent or above, though other variables such as business cycles and interest rates begin showing variance shares of higher than 50 per cent.

Table 1.4: Summary of results for major advanced economies and China, 1991Q1-2000Q4

	China	Canada	France	Germany	Italy	Japan	UK	USA
GDP	0.21	0.53	0.50	0.21	0.37	0.25	0.64	0.20
Exports	0.20	0.30	0.85	0.84	0.78	0.44	0.62	0.22
Imports	0.24	0.26	0.83	0.71	0.81	0.62	0.61	0.69
Business cycle	<b>0.66</b>	<b>0.74</b>	<b>0.82</b>	<b>0.75</b>	<b>0.73</b>	<b>0.53</b>	<b>0.66</b>	<b>0.06</b>

The four factors that are responsible for driving comovement in this sub-period are advanced economy trade, European business cycles, North American industrial production and US consumer inflation. It is evident that advanced economies still dominate during this sub-period. The importance of trade as a transmission mechanism is highlighted again, along with the importance of advanced economies as trading partners. The prominence of the US also is evident to see from the important role that US industrial production and inflation play during this time.

Though the factors that drive comovement in this period are global factors, it can be seen from the variance shares that China's integration with the world economy had

increased between 1991 and 2000. Variance shares for China are higher than they were in the previous sub-period, with 66 per cent of the Chinese business cycle explained by a common component. This is in comparison with only 24 per cent in the previous period.

The results confirm the importance of intensive policy reforms for China during this time, and especially at the start of the 1990s (Wang, Gao & McNown, 2009). The Chinese government announced major reforms to commercial and central banking, trade, investment, exchange rates and corporate governance in 1993 (Tsang & Cheng, 1994; Rawski, 1995). Labour market reforms in the 1990s also saw large layoffs of employees in the state sector (Yueh, 2004).

#### **1.4.4 Factor analysis results: 2001Q1-2011Q2**

It is in this final sub-period that much of the interest lies, as it is during this time that the global financial crisis played out. China's gradual reform processes also reached a zenith during this time, as the country became a member of the World Trade Organisation in 2001 and rose to become the second largest economy in the world. One would therefore expect to see much more comovement in Chinese variables during this sub-period.

This expectation is confirmed by the variance shares, which show higher levels of variance in Chinese variables that can be ascribed to a common component. Though the variance shares for China remain rather low in comparison to those for advanced economies, the country does show movement towards coupling to advanced economies during this period.

**Table 1.5: Summary of results for major advanced economies and China, 2001Q1-2011Q2**

	China	Canada	France	Germany	Italy	Japan	UK	USA
<b>GDP</b>	0.38	0.70	0.78	0.79	0.85	0.66	0.76	0.76
<b>Exports</b>	0.72	0.67	0.92	0.90	0.89	0.72	0.67	0.85
<b>Imports</b>	0.69	0.35	0.94	0.83	0.92	0.72	0.78	0.85
<b>Business cycle</b>	<b>0.59</b>	<b>0.85</b>	<b>0.94</b>	<b>0.87</b>	<b>0.94</b>	<b>0.90</b>	<b>0.92</b>	<b>0.87</b>

For China, imports, exports, the exchange rate and business cycle show variance shares that are much higher than they have been in previous sub-periods. For example, between 1979Q3 and 1990Q4, the variance share for Chinese exports was only around 8 per cent, with imports showing a variance share of 15 per cent. This

increased somewhat between 1991Q1 and 2000Q4, to 20 per cent for exports and 24 per cent for imports. In this final sub-period, the variance share for exports jumps to 72 per cent, and 69 per cent for imports. Clearly, trade became very important for China as its economy liberalized. About 60 per cent of the Chinese business cycle is explained by a common component confirms that the Chinese business cycle has become more integrated with the global economy.

For advanced economies, it is clear that this period brought about very high levels of comovement. The amount of variables with variance shares of more than 80 per cent increases in this sub-period. Imports, exports and exchange rates remain strong transmitters of comovement between these economies, while many also display high variance shares for interest rates and business cycles. While China only shows slight signs of coupling, advanced economies show strong coupling to one another in a variety of variables – evidently no-one could really escape the global economy in the decade since 2000.

The four factors driving comovement for this sub-period are global trade, global business cycles, advanced country exchange rates and advanced inflation. While trade and business cycles had been important factors in other sub-periods, it is in this final sub-period that the factors reflect global influence instead of only advanced countries. Given China's emergence as a trade and growth giant during this particular phase of economic history, this is not surprising.

As with other sub-periods investigated in this study, advanced country exchange rates point once again to the importance of these trading partnerships for the global economy. The inflation factor underlines the importance of monetary policy in comovement. Between 2001 and 2011, then, the Chinese economy experienced a coupling with advanced economies. This effect is much stronger than it had been for previous sub-periods, showing the sensitivity to global economic events has increased.

#### **1.4.5 A comparison of sub-periods**

For the overall period and the various sub-periods that are investigated, trade, business cycles and inflation are prominent factors in explaining comovement between China and advanced economies.

An analysis of the various sub-periods makes it clear to see that, since China embarked on its gradual reform path in the late 1970s, the economy has also been gradually coupling to advanced economies. By the end of the sample, between 2000 and 2011, China's trade and business cycle are also helping to drive the comovement between advanced economies and China.

In conclusion, then, it is evident that China has not completely decoupled from advanced economies. As China's gradual reforms have opened the economy up to trade, the Chinese economy has inevitably become more integrated with advanced economies. This can be seen in the evolution of China's business cycle variance shares. In the first decade after embarking on its open door policy (1979Q3-1990Q4), only 24 per cent of the variance in the Chinese business cycle could be attributed to a common component. In following decades, this increased so that the roughly 60 per cent of the Chinese business cycle was attributed to a common component. Specifically, the variance shares were 66 per cent between 1991Q1 and 2000Q4, and 59 per cent between 2001Q1 and 2011Q2.

For the Chinese economy, this means that domestic policy has increasingly become less important in driving economic performance. Evidently, trade and global prices are very important factors that are driving the comovement between China and advanced economies. This is not surprising, given China's importance as a global trading partner. The picture that emerges from comparing the sub-periods above is one of a world that has increasingly become interrelated in the decades between 1980 and 2011. To illustrate the changing dynamics of this comovement more clearly, rolling regressions are presented in the following section.

#### **1.4.6 Rolling regressions**

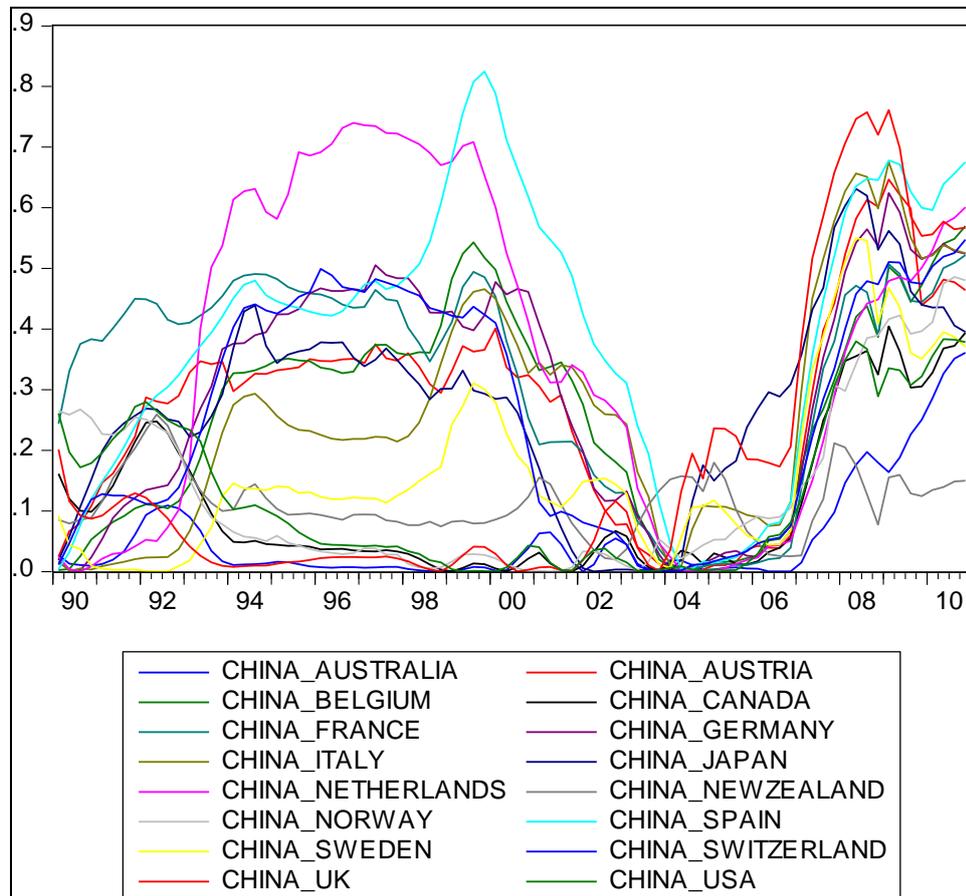
In addition to the conclusions drawn from the factor analyses, further estimations are done in order to gain a deeper insight into the relationship between China and various advanced economies over time. This is done by estimating a ten year rolling regression specified as:

$$Business\ Cycle_{China} = Business\ Cycle_{Advanced\ economy}$$

Business cycle data here is extracted from logged quarterly GDP for China and the 17 advanced economies in the sample using the HP filter. Quarterly data is available from 1979Q3-2011Q2 and obtained from the Cambridge GVAR Toolbox.

The regression is rolled on a ten year window in order to show how the amount of the Chinese business cycle that is explained by various advanced economy business cycles has changed over time. The results of this rolling regression are shown in Figure 1.1 below, where the R-square from each regression is plotted.

Figure 1.1: Ten year rolling regression of advanced economy and Chinese business cycles, 1990-2010



The graph above shows that, throughout the 1990s, the extent to which advanced country business cycles explained the Chinese cycle was quite heterogenous. Comovement decreased after 2001 and increased quite drastically during the Great Recession. It is interesting to note the decrease in comovement around 2001, as this was the time at which China joined the WTO. It is likely that the trade boost that followed China's accession to the WTO allowed the country to diversify trade. As China traded more and more with other emerging countries, their reliance on advanced economies declined. Furthermore, Chinese reforms were not yet complete in 2001. For instance, complete Chinese financial reform only took place some time after WTO accession, with only limited foreigners being allowed to buy Chinese A-shares since 2003 (Shaffer, 2014). China's "Go Out" policy also only really took off in

2003 – prior to then, private Chinese companies could not invest overseas (Buckley, 2007). There were also important idiosyncratic factors at play in China during the early 2000s, such as the outbreak of SARS in 2002 (Knobler, 2004) and the outbreak of Avian flu in 2003 (WHO, 2014). The first Sino-US strategic economic dialogue was also only held in 2006 between then president George Bush and premier Hu Jintao. Trade and financial linkages between these global economic giants were cemented during negotiations (Paulson, 2008).

By 2006, however, the picture clearly changes and the R-square values climb to as high as 76 per cent, remaining high during the crisis years and immediately beyond. These values are much higher compared to the 20 and 30 per cent values during the mid-2000s and shows that the Chinese economy did not decouple from advanced economies during the credit crunch.

### **1.5 Conclusion**

This paper investigated real comovement between China and a set of seventeen advanced economies between 1979Q3 and 2011Q2. The literature review showed that the Chinese economy has become increasingly important as a trading partner whose demand spills over via commodity markets in particular. This impact is not only restricted to other emerging markets such as that of Latin America. Economies such as that of the US, Japan and Eurozone also show increased sensitivity to the Chinese business cycle. The literature therefore implies that China would not have been impervious to the credit crunch which originated in the US in 2008 and soon spread to other advanced economies. The continuing crises in the Eurozone will likely also not pass China by unnoticed.

While historically China has displayed high growth rates, in 2015 it seems that average growth rates of 10 per cent are likely a thing of the past for China. Amid fears of a so-called hard landing for the Chinese economy, the issue of China's comovement with advanced economies is very prominent. The dynamic factor model employed, substantiated by the ten year rolling regressions highlighted the fact that the Chinese economy has become more integrated with advanced economies.

China instituted its Open Door policy in 1978. As further, gradual reforms occurred in the following decades, variance shares for China increased. As would be expected, idiosyncratic factors dominate as explanations for Chinese variables during this

decade, when domestic policy was very important. However, in later decades, it is evident that larger portions of the Chinese business cycle are explained by common factors. The high variance shares displayed by import and export variables throughout emphasise the important role that trade plays in fostering comovement between China and advanced economies. Rolling regressions confirm the existence of this trend: The Chinese economy has gradually been coupling to advanced economies, as liberalisation gains momentum.

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