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ASSESSING THE VULNERABILITY OF EMERGING ASIA TO EXTERNAL DEMAND SHOCKS: THE ROLE OF CHINA

by D. Marconi* and L. Painelli*

Abstract

In this paper we assess the vulnerability of China to external shocks via the indirect negative effect of a slow-down in exports on domestic demand for investment. In the last decade China has increased its dependence on external demand, particularly from the advanced countries; at the same time it has become a primary destination market for goods produced in the rest of emerging Asia. Since 2001 investment expenditures have represented a key driver of Chinese GDP growth; as a very large share of activity in the manufacturing sector is export oriented, we expect fixed capital investment in this sector to be highly related to exports. Overcoming serious shortcomings in available data, we estimate an investment equation for the period 1993-2006 and find an elasticity of investment to exports in the manufacturing sector in the range between 0.9 and 1. Taking into account the dominant contribution of capital accumulation to Chinese GDP growth, we conclude that the growth effects of an external demand shock could become significant when taking into account the domestic investment channel.

JEL: F14, E22, N6.

Keywords: exports, investment, elasticity.

CONTENTS

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I. Introduction

As economic weakness has crippled in the US and other major advanced countries, the issue of how much a contribution to world growth could come from continuing strong expansion in the emerging markets has become crucial. In 2007 emerging Asia's GDP increase of 9.2 per cent contributed by 44 per cent to global growth; China by itself contributed by nearly 27 percent.

Part of the answer relies on whether emerging Asia (EMA) has de-linked from advanced economies' business cycle. Recently, several papers have shown a growing regional interdependence and synchronization of business cycles in EMA, which, as a whole, has however kept a strong correlation with cyclical developments in the advanced countries (Mori and Sasaki, 2007; Moneta and Ruffer 2006; ADB, 2007, 2008). Several studies have estimated the impact of a US slowdown on EMA growth through direct and indirect (via third markets) trade effects (Dées and Vansteenkiste, 2007; BIS 2007) or by means of global VAR models (IMF, 2007; Dées and Vansteenkiste, 2007). Results based on these two approaches generally find a limited negative effect: a 1 percentage point decrease of US GDP growth, which in turn implies a 2 percentage points decline in imports, implies a reduction in the range of 0.2-0.5 percentage points of GDP growth in EMA, or in China.

Such models may however underestimate the true impact, because domestic demand in EMA is often not well specified. In this paper, we concentrate on China and we seek to evaluate the sensitivity of domestic investment expenditures in manufacturing to external demand shocks. Given the peculiar high weight of investment expenditures in Chinese GDP, as high as 40 per cent, assessing the link between exports and investment demand is key in order to fully appreciate the growth impact of a trade shock. Moreover, as China has gained a central role within the EMA as a primary destination for the latter's exports not only of intermediate products but also of final goods used for domestic consumption and investment, such an estimate would in turn allow us to make a better appraisal of the spillover effects to its major trading partners.

In Section II we briefly describe the leading role of China within EMA, taking also into account recent export dynamics in the region. In section III we illustrate the role played by investment in fixed capital in China. In Section IV we estimate the elasticity of investment to exports based on yearly data for 28 Chinese manufacturing sectors in the period 1993-2006. Section V concludes.

II. The leading role of China within emerging Asia

In the last fifteen years China has become a major destination market for the other emerging countries in the region. Exports to China have come to represent above 10 per cent of GDP for Malaysia, Philippines and Singapore, above 8 and 7 per cent for Korea and Thailand, respectively (figure 1a). On the one side, such development reflects the intensification of the production network within the region, with China being the fulcrum of it, by importing parts and components from regional trading partners to be processed and assembled into final goods and then re-exported to third markets. The evidence of it is double: a direct one, consisting in the very large share of parts and components (well above 50 per cent) in Chinese imports from EMA; an indirect one, based on the exceptionally rapid penetration of Chinese exports into rich Western markets, which has been coupled with market share losses suffered by other EMA countries as a whole. The latter pattern could be consistent with China being increasingly a gate to the West for products made throughout Asia.

On the other side, however, in the last five years exports of final goods by EMA countries to China have also strongly expanded, with their weight in GDP more than doubling for Singapore, Malaysia, Korea and Thailand (fig. 1b); the latter countries mainly send (for over half a share) capital goods to China.[1]

[1] Further evidence of the increasing dependence of EMA on Chinese final demand is offered by Mori and Sasaki (2007) by means of the input-output analysis of the region. They find that after 2000 the degree of income dependence has deepened particularly for Singapore, Taiwan and Korea, going from less than 1 per cent in the '90s to 5.5, 6.3 and 3.6 per cent respectively. The degree of income interdependence is calculated as the ratio of the value-added of the home country caused by an increase in final demands of other countries. In recent years the income dependence of the NIES and Asian 4 countries on foreign final demand has increased, particularly on that outside the region and on China.

Fig. 1a

Exports to China as percentage of GDP in selected countries

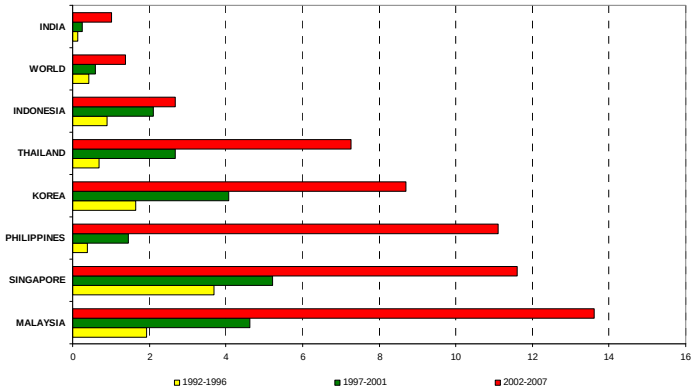
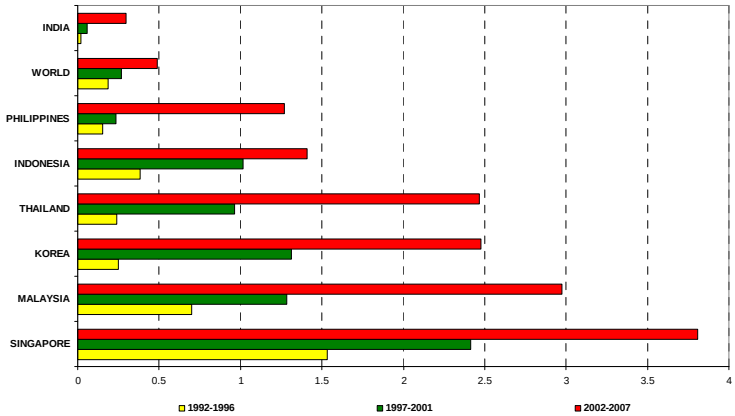


Fig. 1b

Exports of final goods [(1)] to China as percentage of GDP in selected countries

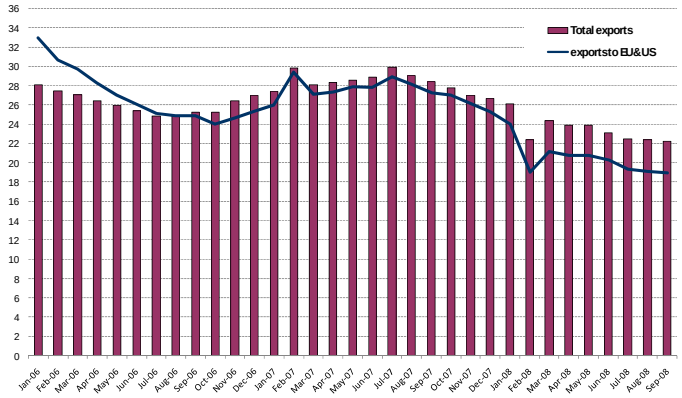


Source: authors' calculations on UN Comtrade and IMF data.
(1) Excludes exports of parts and components.

In recent months Chinese exports have slowed down, from a rate of 28 per cent in mid 2007 to 22 per cent on average in the 12 months ending in September 2008: the compensation offered initially by the EU and the commodity exports countries to the marked deceleration of US demand, already materialized in early 2007, has actually come to the end. As can be seen in figure 2 the dynamics of the sum of exports to the EU and the US (henceforth, G2), which represents about 40 per cent of total exports, perfectly summarize the dynamics of total Chinese exports. As exports amount to 40 per cent of GDP in China, such a slowdown is going to feed through GDP directly even though a large share of these exports (about 50 per cent) is the result of processing and assembling imported intermediate goods, and indeed those imports have slowed down quite markedly as well since the beginning of 2007 (fig. 3).

Fig.2

China: growth rate of total exports and exports to EU and US
(12-months moving average)

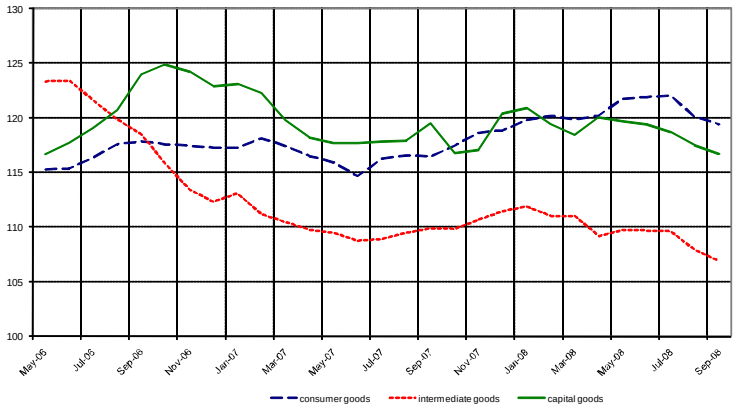


Source: CEIC

As no reliable data on GDP composition by expenditures are available yet for 2008, it is still too early to assess whether the exports slowdown in China is not only implying less imports of intermediate inputs, but also feeding through domestic demand, via the indirect income effect and the weakening of investment in export-oriented sectors. However, it is worth noting that, as indicated by the import flows classified by broad economic category (BEC), imports of capital goods in China are slowing down in value as well as in volume terms, the latter from an average rate of 20 per cent in 2007 to 16,7 per cent on average in the twelve months ending in September 2008 .[2]

Fig. 3

China: imports by broad economic category quantity index
(12-months moving average; previous year = 100)



Source: CEIC.

[2] Imports indexes by BEC classification are available for China only since January 2005 on monthly bases. The indexes refer to aggregate flows (no geographical breakdown is available yet), and are defined as "same month of previous year =100", i.e. year on year growth rates.

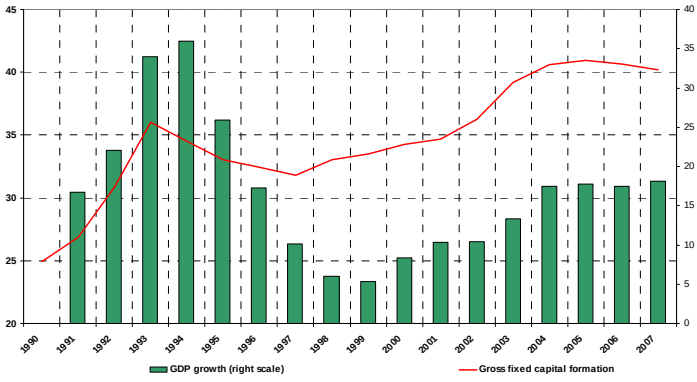
III. Fixed capital investment in China

Since 2001 gross fixed capital formation has become the main driver of economic growth in China. Fixed investment has expanded at a rate systematically above that of GDP (18.6 per cent a year in nominal terms, compared to 15.7 per cent for the latter). In 2007 gross fixed capital formation has come to account for 40 per cent of GDP, very large in international comparisons (fig. 4). Capital expenditures in the manufacturing sector, which represented about one third of the total in 2007 have been growing at an average annual rate of 31 per cent in the last five years (table 1).[3]

The manufacturing sector in China is largely dependent on foreign demand: exports represent 27 per cent of revenues on average, but in some sectors, such as garment and fiber, leather, furniture and other low-end products the share is well above 50 per cent and for machinery above 30 (table 1). Among the larger manufacturing industries, since 2002 investment grew particularly strong in metal working industries, ordinary machinery and textiles, which are also those sectors that experienced a strong pick-up of exports towards G2 in the last five years (table 1).[4]

Fig. 4

China: gross fixed capital formation as percentage of GDP and GDP growth
(at current prices, RMB)



Source: CEIC.

[3] In the last few years investment grew fast in the real estate sector as well (peaking 33 per cent in nominal terms in 2007) coming to account for 24 per cent of total investment expenditures, also reflecting increasing prices of land and houses.

[4] Concordances between industry and trade data for China are reported in the Appendix, table A.

Tab. 1

China: average annual growth rates of gross fixed investment and exports to USA by manufacturing branches

Sector	2006		1995-2006		1998-2001		2002-2006	
	Exports value as share revenues of in 2006 (xs_i)	Share of capital stock	Change in capital stock	Exports to USA and EU	Change in capital stock	Exports to USA and EU	Change in capital stock	Exports to USA and EU
	%		%					
Total manufacturing	**26.9**	**100**	**8.8**	**21.0**	**-4.9**	**14.7**	**31.1**	**30.6**
Beverages	4.2	2.8	3.0	9.1	-21.0	9.2	28.1	8.2
Chemicals	12.0	15.6	10.9	16.1	-19.2	8.9	42.2	22.0
Cult. Edu & Sports art.	73.3	0.5	4.7	13.2	-7.9	6.9	22.6	9.5
Electric machinery	32.1	4.2	7.3	25.5	-5.3	22.7	24.5	23.1
Ferrous metals	9.4	12.3	10.7	32.0	7.0	5.4	36.1	50.4
Food	11.6	5.9	8.0	19.4	-21.3	14.0	53.0	15.7
Furniture	55.2	0.4	17.0	27.5	-3.7	25.2	48.5	25.7
Garment & Fiber	51.4	1.6	7.3	12.2	2.1	6.4	27.0	11.0
Leather, Fur & Dow n	52.7	0.9	5.3	11.5	9.3	6.8	22.4	9.9
Metal products	32.3	2.5	6.4	21.9	-1.4	19.9	26.6	20.9
Non ferrous metals	8.2	3.9	25.5	23.3	-0.8	7.3	34.6	33.5
Non metal minerals	11.0	8.3	3.9	18.4	-31.1	13.8	64.7	18.0
Ordinary machinery	20.5	4.4	8.8	35.8	-12.3	22.0	47.4	34.0
Paper	10.2	3.3	12.5	24.8	6.3	23.8	13.0	20.3
Petroleum processing	2.3	5.2	6.1	25.5	3.6	13.9	18.8	24.6
Plastic products	27.5	2.5	9.5	16.5	2.8	15.0	17.8	11.1
Printing	12.5	1.2	6.4	26.4	19.6	16.6	1.6	17.4
Rubber products	31.7	1.2	9.0	30.8	-3.4	20.7	22.7	40.7
Special machinery	31.6	10.0	11.9	15.1	13.4	9.7	25.7	8.9
Textiles	26.5	7.5	2.5	17.5	-2.8	10.0	31.0	18.9
Timber processing	23.9	0.9	10.6	25.8	-10.6	26.4	22.1	24.1
Tobacco processing	0.8	1.5	-3.2	8.8	-14.8	9.5	-1.6	3.3
Transport equipment	18.5	7.1	10.8	28.5	-6.2	31.8	28.0	29.9

Source: elaborations on CEIC and Comtrade data

IV. The elasticity of fixed capital investment in the manufacturing sector and exports in China

In this section we estimate the long-run elasticity of investment to exports using yearly data for 28 manufacturing sectors in China.[5] Data for the stock of fixed capital at historical cost (K_{jt}) and profits (P_{jt}) in 28 manufacturing sectors (j=1,…, 28), classified according to the Chinese industrial classification, GB T4754-2002 (henceforth CIC), for the period 1993-2006 (t=1993,…, 2006) is from the National Bureau of Statistics of China.[6] As regards our main variable of interest, exports by sector (X_{jt}), unfortunately there are no exports data from national sources that could be exactly matched with industry data sector by sector; therefore, in order to match the CIC with the International Standard Industrial Classification (ISIC) and the latter with the Standard International Trade Classification (SITC) we had to

[5] Available monthly and quarterly industry and trade data that could have been matched cover a very short time span; moreover, not being seasonally adjusted, such data would not have gained us any advantage, both in terms of number of observations and short-run dynamics evidence.
[6] See the Appendix for definitions.

construct concordance tables by ourselves gathering information from different sources (UN Indstat and Comtrade databases and national sources). A match has been possible only aggregating the 28 manufacturing sectors into 23 larger ones.[7]

We estimate a standard equation derived from neoclassical models of firm's investment behavior, the main departure being the introduction of exports. As in Nagamo (2005), we assume the latter to be the relevant demand component to which firms further adjust their capital stock; as in Caselli et al. (2003), we add among regressors the lagged dependent variable to take into account adjustment costs.

We run the following regression:

$$(1)\ \frac{I_{jt}}{K_{j(t-1)}} = \beta_1 \frac{I_{j(t-1)}}{K_{j(t-2)}} + \beta_2 \frac{P_{j(t-1)}}{K_{j(t-2)}} + \beta_3 \frac{XG2_{jt}}{K_{j(t-1)}} + \beta_4 \frac{XG2_{j(t-1)}}{K_{j(t-2)}} + \gamma_t + \nu_j + \varepsilon_{jt}$$

$$j = 1,...,23;\ t = 1993,...,2006$$

Where j is the manufacturing sector considered (a complete list is reported in table 1); *K(j)* is the stock of capital in sector *j*. Investment in sector *j* is defined as $I_{jt} = K_{jt} - K_{j(t-1)}$. *P(j)* are total profits, and $\frac{P_{jt}}{K_{j(t-1)}}$ is a measure of the profitability of the sector. The latter captures both the internal funding ability to finance investment and also proxies the demand for the sector's output.[8] X_{jt} are exports in the *j-th* sector. Since we are interested in evaluating the impact of a slowdown of exports to major advanced countries, we consider only exports toward USA and EU (G2). Moreover, this choice has the advantage of taking out a large part of assembling and processing trade, as the latter mainly involves trade with EMA and greatly inflates trade flows in both directions.[9] To better capture the long-run response of investment to exports, we introduce contemporaneous and lagged values of our export variable, hence $(\beta_3 + \beta_4)/(1-\beta_1)$ is the long-run response of manufacturing investment to exports. Time dummies and individual fixed effects are also included (respectively γ_t and ν_j).

As the export variable by manufacturing sector is constructed by us, it may suffer from measurement errors; moreover, exports incorporate not only value added produced in China,

[7] By collapsing the initial 28 manufacturing industries into 23 larger sectors, we could match the CIC with the ISIC at 3 digits (details and concordances are reported in the Appendix; table A); then, using concordances in Marconi and Rolli (2007), we could match the 3-digit ISIC with the 3-digit Standard International Trade Classification (SITC).

[8] Unfortunately there are no variables at industry level that could capture internal demand better than profits. However, as the correlation between profits and exports by sector is close to zero, we are quite confident that at least there is no collinearity between these two variables.

[9] The share of exports to EMA classified as parts and components is about 45 per cent, compared to a share of less than 20 per cent of exports toward G2 countries.

but also value added produced abroad and imported as intermediate inputs. Hence, for robustness check we run a second regression, where we use total *ordinary* exports X_t^{OTOT}. The definition of *ordinary* exports is adopted by the Chinese custom and refers to total exports of goods for which intermediate imports represent a negligible portion of the output value, that is, the goods are produced in China, using almost entirely intermediate goods produced in China as well. Such a definition, useful for fiscal purposes, as imported material for re-export are subject to a different tax regime, is very useful for us as it allows to isolate those exports that incorporate a larger value added produced in China, which should, indeed, activate more investment expenditures.

As total *ordinary* exports, however, do not across sectors, we interact X_t^{OTOT} with the proportion of total revenues due to exports in each sector in 2006, xs_j (see column 1 in table 1); such interacted variable is inspired by Rajan and Zingales (1998).[10]

Regression (2) then is as follows:

$$(2)\ \frac{I_{jt}}{K_{j(t-1)}} = \beta_1 \frac{I_{j(t-1)}}{K_{j(t-2)}} + \beta_2 \frac{P_{j(t-1)}}{K_{j(t-2)}} + \beta_3 \frac{X_t^{OTOT}}{\sum_{j=1}^{28} K_{j(t-1)}} * xs_j + \gamma_t + \nu_j + \varepsilon_{jt}$$

$$j = 1,...,28;\ t = 1993,...,2006$$

To take care of endogeneity problems we run both regressions using a two-step GMM-System estimator for dynamic panel-data (Arellano-Bover/Blundell-Bond, 1995, 1998, estimator).[11] Results, reported in table 2 below, show that all the coefficients in the GMM-System regression bear the right signs and are all significant, both in Regression (1) and (2). The coefficient on lagged investment is positive, indicating some degree of persistence in

[10] Unfortunately, the value of output exported by sector, classified according to the Chinese definition of industrial classification (GB T4754-2002) is available only from 2005. Therefore, we assume that the share of exported value on total revenues has remained constant (or it has changed similarly across sectors) through time. The analogy with the identification method proposed by Rajan and Zingales (1998) is the following: in Rajan and Zingales (1998) the two dimensions are j industries (j=1,..., m) and k countries (k=1,…, n); in our case we have j industries (j=1,..., 28) and k time periods (k=1,..., 13), once we control for industry and time effects (as they do for industry and country fixed effects), the interaction between the time-varying variable (total exports to total capital stock) and the industry-varying variable (the share of exports to value added), should capture the differential effect (if any) of the time-varying variable of interest on industries with different characteristics.

[11] The system of generalized method of moments (GMM-Sys) estimator for dynamic panels fits linear dynamic panel-data models when p lags of the dependent variable are included as covariates and the unobserved panel-level effects are correlated with the lagged dependent variable and other covariates. This estimator combines instruments in levels for equation in differences with instruments in differences for equation in levels. This method reduces the finite sample bias caused by weak instruments. It is particularly suited for small T and large N (Blundell and Bond, 2000; Bond 2002).

investment dynamics. Finally, investment responds strongly to profitability; this is not surprising, as retained profits represents the very first source of investment financing in China (Marconi and Santoro (2007)). Based on these estimates we then compute long-run responses of investment to exports, which are equal to $(\beta_3 + \beta_4)/(1-\beta_1)$ in the first specification and $\frac{\beta_3}{1-\beta_1} * xs_j$ in the second, and log-run elasticities (table 3). Long-run elasticity are obtained as follows:

$$\eta_L^1 = \frac{\beta_3 + \beta_4}{1-\beta_1} * \frac{\frac{1}{T}\sum_{t=1}^{13}\sum_{j=1}^{23} p_{jt*}(X_{jt} / K_{j(t-1)})}{\frac{1}{T}\sum_{t=1}^{13}\sum_{j=1}^{23} p_{jt*}(I_{jt} / K_{j(t-1)})} \quad \text{for regression 1;}$$

$$\eta_L^2 = \frac{\beta_3}{1-\beta_1} * xs_j \frac{\frac{1}{T}\sum_{t=1}^{12}(X_t^{OTOT} / K_{t-1}^{TOT})}{\frac{1}{T}\sum_{t=1}^{13}\sum_{j=1}^{28} p_{jt*(I_{jt} / K_{j(t-1)})}} \quad \text{for regression 2;}$$

and $K_{t-1}^{TOT} = \sum_{j=1}^{28} K_{j(t-1)}$; $p_{jt} = K_{jt} / \sum_j K_{jt}$.

In Table 3 we report the estimated elasticities based on the two regressions.

Tab. 2

Fixed Investment equation - GMM-System -
Dependent variable $I_{jt}/K_{j(t-1)}$

	REGRESSION (1)	**REGRESSION (2)**
$I_{j(t-1)}/K_{j(t-2)}$	0.55**	0.67***
$P_{jt}/K_{j(t-1)}$	0.53**	0.94***
$XG2_{jt}/K_{j(t-1)}$	0.13***	
$XG2_{j(t-1)}/K_{j(t-2)}$	-0.0	
$\left[X_t^{OTOT}/K_{(t-1)}^{TOT}\right]* xs_j$		0.94***
Year Dummies	Yes	Yes
Sector Dummies	Yes	Yes
Sargan – Hansen (p-value)	0.78	0.98
Number of observations	299	336
Sectors	23	28
Years	13	13

Notes: *,**,*** indicates that coefficients are significant at 10%, 5% and 1% significance level.
In columns (2) and (4) are reported estimations by two-step GMM-System estimator for dynamic panel-data (Arellano-Bover/Blundell-Bond (1995, 1998) estimator; xtdp command in Stata ver. 10). The regression considers endogenous covariates and includes a full set of time dummies. Significance levels are calculated based on one-step standard errors robust to heteroskedasticity (Bond et al. 1999). The Sargan-Hansen is a test for over-identifying restrictions (p-values reported). Instruments in the level equation include $\Delta ik_{t-2}, \Delta ik_{t-3}$. Instruments in the difference equation includes lags from 4 to 6 of all covariates in the first regression and all available moment conditions in the second regression (i.e. from lag 3 on).[12]

As it is shown in Table 3, the two regressions deliver very close average elasticities of investment to exports in the manufacturing sector in the estimated period: the elasticity of investment with respect to G2 exports (regression 1) being equal to 0.9, and that with respect to total ordinary exports (regression 2) a bit higher, equal to 1. Among the sectors, as we would expect, the most export oriented, such as cultural education and sports articles, furniture, garment and fiber, leather, machinery and metal products, are also those that show above average elasticities, in both regressions (tab. 3). Therefore, we might conclude that, as

[12] The suspiciously high p-value of Sargan-Hansen test in the second regression indicates that there might be an overfitting problem, that is, too many instruments are being used; however, we chose to keep all the instruments because, while the coefficient estimates for the profit and the export variables are robust to different subsets of instruments (which all pass the Sargan-Hansen test with very reasonable p-values) and to different estimation methods (GMM difference, GMM system and within groups) the coefficient estimate on the lagged dependent variable ranges from 0.25 of the GMM difference equation to 0.8 in the GMM system with lags from 2 to 6, as the GMM difference estimate might be downward biased, we chose the most prudent estimate within the GMM system. Results are available from the authors upon request.

also in Nagamo (2005) for a set of emerging Asian countries, our estimates confirm that exports constitute an important driving force for accumulation in China as well.[13]

Tab. 3

Long-run elasticity of manufacturing investment to exports based on regressions estimates

	Regression 1	Regression 2
Sector	**Elasticity**	
Total manufacturing	**0.9**	**1.0**
Beverages	0.0	0.2
Chemicals	0.1	0.5
Cult. Edu & Sports art.	9.6	2.8
Electric machinery	2.1	1.2
Ferrous metals	0.0	0.3
Food	0.2	0.4
Furniture	2.0	2.1
Garment & Fiber	5.5	2.0
Leather, Fur & Down	1.2	2.0
Metal products	2.7	1.2
Non ferrous metals	0.0	0.3
Non metal minerals	0.2	0.4
Ordinary machinery	3.3	0.8
Paper	0.0	0.4
Petroleum processing	0.1	0.1
Plastic products	0.5	1.0
Printing	0.1	0.5
Rubber products	0.3	1.2
Special machinery	0.1	2.1
Textiles	0.7	0.8
Timber processing	0.4	0.7
Tobacco processing	0.0	0.0
Transport equipment	0.2	0.5

Since investment in manufacturing accounts for about 20 percent of GDP, and assuming that investment in the other sectors (agriculture, mining, construction and services) will not be affected, back of the envelope calculations lead us to conclude that a slowdown of exports demand by G2 by two percentage points leads to a slowdown of GDP, via less investment demand in manufacturing, between 0.4 percentage points, everything else being equal. Once we add the direct effect of the export slowdown on GDP (which amounts to at least another 0.4 percentage points), we can conclude that the Chinese economy does not appear really delinked from external demand conditions.

[13] As Nagamo (2005) estimates are conducted on firms level data for investment and exports sales the coefficients are not fully comparable; nonetheless, he finds that export sales represent a very important source of investment financing, short run responses at firms' level appear to be very high, particularly for Malaysia and Thailandia.

Conclusions

The motivation of this paper is related to the issue of whether a support to world growth could be expected from continuing strong economic expansion in the emerging markets in the wake of the sharp slowdown in the advanced countries. There are already signals that Chinese exports have slowed down in 2008, albeit limitedly; domestic demand has remained quite robust so far, but downward risks are increasing. We argue that negative spillovers on domestic demand in China is key in order to assess the degree of vulnerability of the whole Asian region to an external demand shock. We focus in particular on the possible slowdown of investment expenditures in the manufacturing sector, which has been the main engine of China's impressive growth performance in the current decade.

In order to investigate the empirical link between exports and investment in China we estimate an investment equation on manufacturing industry panel data (23 industries for years 1993-2006), using System GMM for dynamic panels. Preliminary findings indicate that the long-run elasticity of manufacturing investment to exports in China is not negligible, ranging between 0.9 and 1. As investment in fixed capital in manufacturing accounts for about 20 percent of GDP in China, assuming that accumulation in other sectors is not affected, simple calculations lead us to conclude that a deceleration of exports by two percentage points implies a slowdown of GDP by at least 0.4 percentage points, everything else equal. Such an effect points to a larger than usually estimated impact of external demand on China's GDP growth. Our conclusion is that domestic demand in China, at least as far as investment is concerned, does not really appear delinked from external demand conditions.

Given the high degree of business cycles synchronization reached within EMA (ADB 2007 and 2008) and the increasing dependence of the region on Chinese final demand (Mori and Sasaki 2007), should China demand slow down significantly, the effects will be felt quite strongly on the rest of emerging Asia as well.

On the other hand, we must recognize that China, given the high level of production capacity already built in and given its very sound public finance (in 2007 gross public debt was 20 percent of GDP and the budget surplus 0.6 percent of GDP) has indeed plenty of room to counteract this vulnerability rebalancing domestic demand towards household consumption, which today accounts for less than 50 per cent of GDP. And indeed, social spending (particularly in education and health care) is budgeted to increase substantially in 2008 (at least by 30 per cent), and this could considerably help to reduce households precautionary savings and boost domestic consumption.

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Appendix: Data sources and variables' definitions

Enterprise Financial Data and Indicator

Source: China Statistical Yearbook 2005, National Bureau of Statistics.

Main economic indicators and efficiency indicators of all state-owned industrial enterprises, and of non-state-owned enterprises above designated size classified by type of registration, light and heavy industries, size of the enterprises, branch of industrial enterprises and regions. Industrial statistics covers all industrial enterprises within the territory (excluding Hong Kong, Macao and Taiwan). Since 1998, the coverage of industrial statistics was changed from types of ownership to the size of enterprises, they are: all state-owned industrial enterprises and those non-state industrial enterprises with annual sales over RMB5 million.

Annual Average of Value of Fixed Assets at cost (K)

Annual Average of Fixed Assets at cost refers to average of the value of fixed assets during the reference period, calculated with the following formula:

Annual Average of Value of Fixed Assets = sum of value of fixed assets at the beginning and at the end of each month from January to December / 24. Information on this indicator can be obtained from the beginning and ending figures of the original value of fixed assets.

Total Profits (P)

Total Profits refer to the final achievements of production and operation of the enterprises, represented by the total profits after deducting losses (loss is expressed by the negative figure). It is the sum of profits from operation, income from subsidies, investment earnings, net income from activities other than operation, and adjustment of profits and losses of previous years.

Concordances for exports by manufacturing sectors (Xj)

The dataset contains bilateral Chinese export and import values at 5 digits level, classified according to the SITC (rev. 2) code. It covers the period 1992-2007 and includes the major advanced countries trading partners: USA, Japan, Europe.[14] Trade data have been obtained from COMTRADE database maintained by the UNCTAD. In table A we report the concordance used in this work, where the 28 manufacturing sectors in GB/T 4754-2002 (CIC) classification are collapsed first into ISIC Rev. 2 and then into SITC Rev. 2 classifications.

[14] Europe is obtained as the sum of the flows of Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherland, Spain, Sweden and United Kingdom.

Tab. A

Concordances between GB/T 4754-2002 (CIC) 2-digit, ISIC 3-digit (rev.2) and SITC 3-digit (rev. 2)

Definition (1)	**CIC**	**ISIC 2**	**SITC 2**
Total manufacturing	C	300	Sum of below
Food products	13+14	311+312	012+014+023+024+035+037+046+047+048+056 +058+ 061+062+073+423+424+431+411+098
Beverages	15	313	111+112
Tobacco	16	314	122
Textiles	17	321	264+265+269+651+652+654+655+656+657+658 +659+ 846+267+653+266
Wearing apparel, except footwear	18	322+324	842+843+844+845+847+848+851
Leather products	19	323	611+612+613+831
Footwear, except rubber or plastic	(in 322)	--	
Wood products, except furniture	20	331	247+248+633+634+635
Furniture, except metal	21	332	821
Paper and products	22	341	251+641+642
Printing and publishing	23	342	892
Industrial chemicals	26+27+28	351+352	233+511+514+515+516+522+523+531+532+512 +513+ 562+582+583+584+585+591+524+551+592+533 +553+ 554+572+598+882+541
Other chemicals	(in 351)	--	
Petroleum refineries	25	353+354	334+335+323
Misc. petroleum and coal products	(in 353)	--	--
Rubber products	29	355	621+625+628
Plastic products	30	356	893
Pottery, china, earthenware	31-314	361+362	666+664+665
Glass and products	314	--	--
Other non-metallic mineral products	31	369	661+662+663+667
Iron and steel	32	371	281+282+673+674+675+676+679+671+672+678
Non-ferrous metals	33	372	286+287+288+688+689
Fabricated metal products	34	381	677+691+692+693+694+695+696+697+699+711 +812
Machinery, except electrical	35	382	721+722+723+724+725+726+727+728+736+737 +741+ 742+743+744+745+749+951+751+752+759+712 +718
Machinery, electric	39	383	762+763+772+773+775+716+761+764+771+774 +776+ 778
Transport equipment	37	384	781+782+783+784+785+786+791+713+714+793 +792
Professional & scientific equipment	36+40+41	385	872+873+884+885+871+874+881
Other manufactured products	24	390	289+894+895+897+898+899

(1) According with ISIC 2 definitions.

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