

UBS Investment Research

Asian Focus

Is China Export-Led?

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Do not compute the totality of your poultry population until all the manifestations of incubation have been entirely completed.

— William Jennings Bryan

The granddaddy of them all

Today we thought we would turn our attention to what is probably the biggest and most pervasive “China myth” of them all: the idea that China is an export-led economy.

This myth takes a number of forms. For some observers, the export sector is the leading driver of productivity and income growth for the country as a whole, providing the lion’s share of financing for domestic consumption and investment. Others go even further in portraying China as moribund state-led economy at home, with the authorities propping up growth mostly by maintaining a highly undervalued exchange rate. And for outsiders looking at the flood of goods “Made in China” rushing into US and European shops, it’s easy to conclude that this must be the bulk of what the mainland produces.

However, the numbers tell a very different story. China’s export sector is by no means tiny, but it is still a very moderate share of the economy as a whole, smaller than in most other Asian countries. And despite the rapid growth of headline export turnover, the actual contribution to GDP is barely rising over time. Comparative measures of the role of exports in growth also fail to show a sizeable impact.

The bottom line, as we’ve argued many times before, is that there’s no reason to argue over whether the mainland is “decoupling” from the global cycle – as far as macro growth is concerned the economy is and always has been effectively “decoupled”, and China has little to fear from a global demand slowdown.

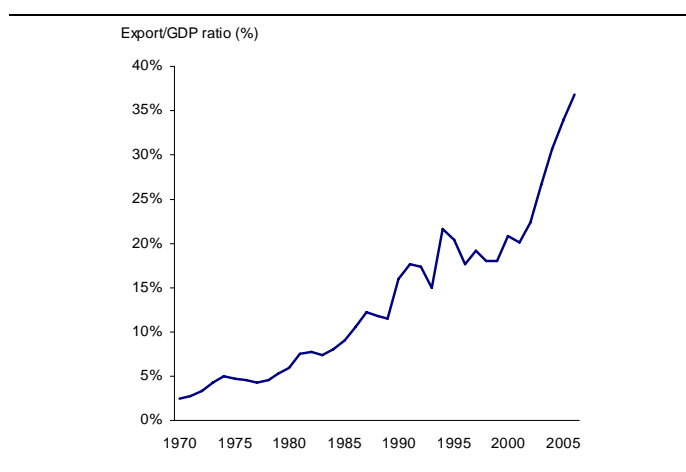
We’ve gone over each of these individual points in earlier publications, but given the importance of the topic (especially now on the cusp of a stronger US consumer downturn) we wanted to pull the various strands together and in one report. Here we go:

1. How “big” are Chinese exports?

Let’s begin with the question of the size and role of exports in the mainland economy today. For the vast majority of investors, the answer boils down into one simple and pervasive number: the export/GDP ratio. What does this number show? If we take annual customs export data in renminbi terms and divide by nominal GDP, we get the trend shown in Chart 1 on the below.

As you can see, total exports have risen sharply as a share of GDP over time, and the headline ratio now stands at over 36%. And, needless to say, the most common conclusions we hear from clients are that (i) exports now “make up” more than a third of the Chinese economy, and (ii) the trade contribution to overall growth is even higher, since the export share is rising over time. If this is the case, then is China clearly at risk of a sharp contraction when global demand for its products slows.

Chart 1: China's rising export exposure?



Source: CEIC, UBS estimates

Unfortunately (or, in this case, fortunately), both of the above conclusions are demonstrably wrong.

Why? For starters, the headline export/GDP ratio is a very misleading, even meaningless statistic. In 2006 Malaysia reported total goods exports of 104% of GDP ... but this obviously doesn't mean that the export sector is larger than the economy itself. For Hong Kong and Singapore the situation is even worse, with ratios over 200%, also a seeming paradox for the uninitiated observer.

How can countries report numbers over 100%? Because the export/GDP ratio compares two incompatible concepts: exports are defined as total turnover while GDP is measured in value-added terms. To use a micro-level analogy for a single company, exports are similar to revenue, while GDP is similar to profit.

In order to arrive at the actual export share of GDP, we need to restate the headline export figure in value-added terms, and this means two things: (i) stripping out the associated import content to find out how much of export revenue actually accrued to the domestic economy, and then (ii) converting that domestic content share into value-added terms by subtracting input purchases from other domestic sectors.

The second step may seem counterintuitive; after all, if we're assessing the role of exports on the economy, shouldn't we be measuring the materials and services export firms buy from the rest of the economy? However, keep in mind that this is precisely what “value added” means: when calculating GDP we exclude goods and services purchases for *all* sectors of the economy, adding up only the wages and profits generated internally. If we left in purchases of domestic inputs for export firms, we would have to do the same for every other sector as well – and this would mean a much bigger denominator than just GDP.

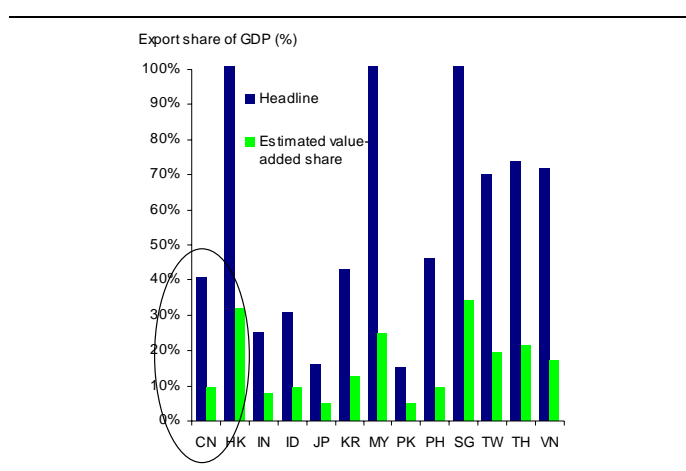
Measure 1: Regional comparisons

So let's take a look at some revised numbers. The first set of figures is a regional calculation using broad back-of-the-envelope assumptions about domestic content as well as value-added across Asian economies. For domestic content shares, we use 50% for light manufacturing, a range from 20% to 50% for electronics (depending on per-capita income levels) and 70% for heavy industrial and resource exports. Next, we assume a constant 50% value-added ratio to total domestic content. Finally, we make an additional downward

adjustment for entrepot economies like Hong Kong and Singapore, where a large portion of headline exports is simply transshipment trade. None of these assumptions is perfect, but all are generally consistent with work done for individual Asian countries, about which more below.

The results of this very basic calculation are shown in Chart 2, which we have published in these pages before (and most recently in the *US Exposure Chartbook*, 16 August 2007). The blue bars show headline export/GDP ratios for Asia, including both goods and services exports as measured in the GDP accounts, and the adjacent green bars show the adjusted “true” export shares.

Chart 2: “True” export shares for Asia



Source: CEIC, UBS estimates

A few of points to make here. First and foremost, the actual export share of every Asian economy is far less than the headline export/GDP ratio would suggest. The average share of GDP for larger Asian countries is in the single digits, and for smaller regional economies the figure is more like 20% to 25%. Second, the numbers make sense; a finding that external trade and trade services account for 30-35% of the Hong Kong or Singapore economy is much more in line with common sense observation than a 200% headline ratio.

And third, at just under 10% of GDP China is slightly more exposed to exports than, say, Japan or India – but of course nowhere near as externally-led as Taiwan or Thailand.

Measure 2: Domestic estimates

Now, if a ballpark figure of 9% to 10% of GDP for China doesn't sound reasonable, let's take a closer look at the domestic data and see what the numbers show.

According to official data, industrial manufacturing accounted for 42.8% of GDP in 2006; remember that in the national accounts both the manufacturing and the GDP figure are calculated on a value-added basis. What portion of industrial value-added is due to exports? Well, we know that headline manufacturing export revenue accounted for 23.2% of overall gross industrial output (GIO) value last year; keeping in mind that the GIO statistics only include enterprises with annual revenue of RMB5 million and above (while at least in theory customs statistics capture all trade activity), the adjusted export share is probably closer to 18%.

Is it safe to assume that the export share of industrial value-added is the same as its share in gross output? Probably yes; according to official 2006 data, light manufacturing industries (which make up the bulk of Chinese industrial export revenues) accounted for 30% of both gross industrial output *and* industrial value-added. Thus, if we take the 42.8% industrial share of GDP and multiply by the 18% export share in industrial manufacturing, we end up with a “true” export share of 7.7% of GDP. But this is just for goods exports, of course. If we add in our guess at value added from trade services and other income, we once again come out with a likely final ratio of ... just shy of 9% of GDP, almost exactly what our regional estimates showed.

Still not convinced? Consider the employment figures. We don't have exact or timely statistics for light manufacturing employment since the official data do not include rural migrants, who make up the vast majority of workers in low-end export industries. However, annual surveys suggest that up to 45 million workers earn their living in export-oriented sectors, i.e., nearly one-third of the total employed in all industrial manufacturing.

This may sound like a lot – after all, this is roughly equivalent to the total population of Korea – but it is still less than 6% of the economically active mainland workforce. And given that export sectors tend to be the most labor-intensive along the Chinese industrial spectrum, it's unlikely that profits accruing to capital investment accounted for a much greater share of the overall total.

In other words, no matter where we look in the Chinese numbers the resulting export share of economy is, well, rather small.

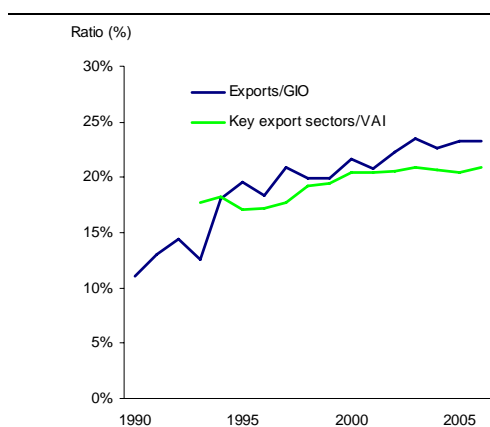
2. How fast is the share expanding?

This is all good and fine, but if we look back at Chart 1 the headline export/GDP ratio has jumped almost exponentially over the past few years. So even if the “true” export share of current GDP is on smaller side, aren't exports still contributing a disproportionate share to overall Chinese *growth*?

Surprisingly, our answer here is “not really”. The fact is that although the headline export/GDP ratio is rising sharply, the value-added share of exports is barely increasing. Let's explain what we mean.

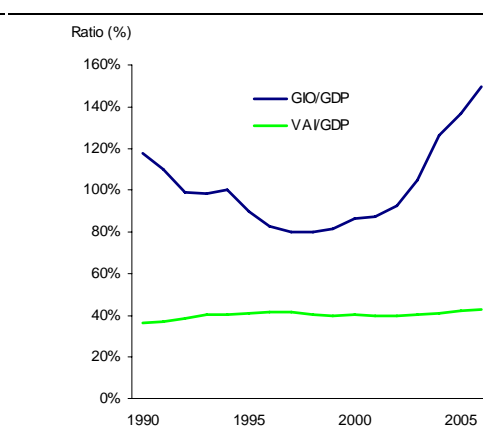
Start with Chart 3, which shows the ratio of exports to overall industry on both a gross and a value-added basis. As you can see, the share of headline export revenue in overall gross industrial output value rose significantly from 1990 through 1995 ... but has barely increased at all over the past ten years (the blue line in the chart). The same is true for industrial value added; we took available data for value added in the clothing and apparel, furniture, toys, sporting goods and IT electronics sectors and calculated their share of the overall annual reported total, and the resulting trend is shown by the green line in Chart 3 – and once again, the share has been fairly flat over time.

Chart 3: No increase in export shares



Source: CEIC, UBS estimates

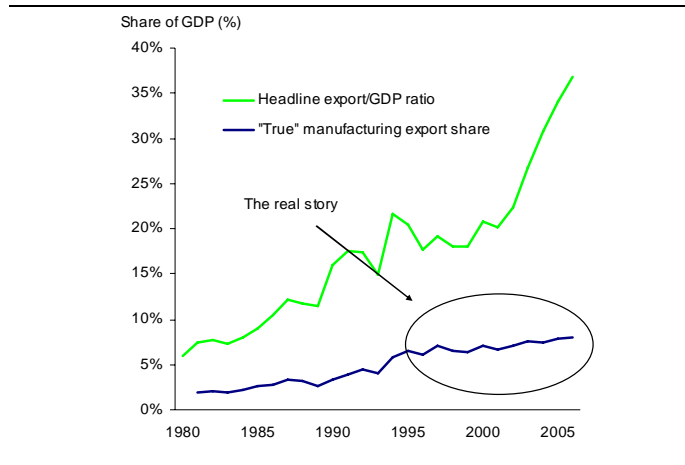
Chart 4: Strange goings-on here?



Source: CEIC, UBS estimates

Combine this with the equally flat trend in the industrial share of overall GDP (the green line in Chart 4), and we get the pattern shown in Chart 5 below: the headline export/GDP ratio may have jumped sharply in the past five years, but the estimated “true” share of (manufacturing) exports as a share of GDP has been surprisingly stable. If this is true, then the contribution of exports to overall growth is pretty much the same as the current share in GDP, i.e., less than 10% of the total.

Chart 5: Export/GDP trends over time



Source: CEIC, UBS estimates

But how can this be, when the headline ratio shot up from 20% of GDP to more than 35% of GDP in the space of only a few years? The answer is back in the blue line in Chart 4: overall gross industrial output also shot up as a share of GDP during the same period, and by a much greater amount (from 90% to 150%), leaving the export share of overall industrial output relatively unchanged.

This still leaves us with a nagging question, however: If you compare the two lines in Chart 4, how can gross industrial output have risen so dramatically as a share of the overall economy, while the industrial value-added share was perfectly flat? Especially when the reported data from industrial margins were relatively well-behaved during the period in question?

The answer is that there *does* seem to be a glaring inconsistency between the two data series in question. And there are really only ways to “square the circle”, so to speak. Either industrial profitability has been falling much faster than the official sectoral statistics suggest (which would explain why the value-added series didn’t jump upward when the gross output numbers did) – or industrial value-added growth (and thus overall GDP growth) has been significantly underestimated.

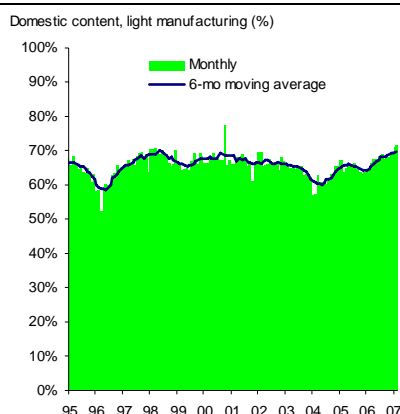
However, the key here is that in either case we still don’t get an explosive trend increase in the adjusted export share over time. If profitability has been declining, then the blue line in Chart 5 above may actually be correct. Alternatively, if we agree that the macro numbers should reflect a stronger increase in industrial value-added, then we will need to adjust both the numerator *and* the denominator of the adjusted export/GDP calculation; we would likely end up with a stronger rise than the current blue line shows, but nothing close to the exponential increase of the headline ratio as shown by the green line in the chart.

From toys to IT

This finding makes sense from another vantage point as well. In 1995, electronics products accounted for around 18% of Chinese manufacturing exports; as of last year, the share had risen to 42%. This is by far the biggest and most important structural change in Chinese export composition over time, and accounts for a good chunk of the stellar rise in the headline export/GDP ratio as well.

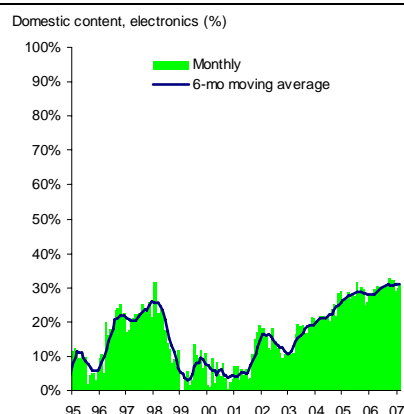
But now look at Charts 6 and 7 below (taken from *To Boldly Go Where No Country Has Gone Before?*, *Asian Focus*, 6 July 2007), which show estimated domestic content in IT electronics vs. other light manufacturing categories in China. We don’t define domestic content here very scientifically, as this is virtually impossible to do on a sectoral level; we simply take the net export margin within individual categories as a rough “rule of thumb” indicator, i.e., the net trade balance in light manufacturing divided by gross light manufacturing exports, and similarly for electronics.

Chart 6: Domestic content in light manufacturing



Source: CEIC, UBS estimates

Chart 7: Domestic content in electronics



Source: CEIC, UBS estimates

As you can see, the estimated domestic content in traditional light manufacturing sectors is two to three times higher than for electronics, even after accounting for a trend increase in the latter figure over time. And this helps explain why the rise in the actual export share of the economy has been much less than the increase in the headline export/GDP ratio: China has been shifting from goods with a high domestic content in favor of new export sectors with a much bigger imported input share.

Note that this does *not* imply that IT electronics production is somehow “lower value added” than labor-intensive toys or textile production, in the sense that most investors use the term. Quite the opposite; electronics production generally requires higher worker skills and more capital-intensive processing facilities in order to thrive, which means that the value generated per hour of labor is higher as well. It’s just that the domestic content level is lower per dollar of export revenue – and this is a very different issue altogether.

A simple example should help illustrate the point; imagine a company that makes furniture for export. The company has 100 workers, produces US\$500,000 worth of output using only domestic inputs, and generates US\$200,000 of wages and profits per year. Using our framework above, we have a 100% domestic content ratio and a 40% domestic value-added ratio, and the company is contributing US\$200,000 to domestic GDP.

Now imagine that the company changes its business model; instead of making furniture, it now decides to make DVD players using the same 100 workers. The company now imports US\$4,500,000 worth of imported inputs from abroad, processes these inputs with a minimum of additional domestic sourcing and generates US\$5,000,000 of export revenue. At the end of the day, the company finds that wages and profits have risen to US\$250,000.

What has this done to our calculation? We now have a 10% domestic content ratio, a 50% domestic value-added ratio, and the company is now contributing US\$250,000 to domestic GDP.

Three quick points here: First, the actual export contribution to GDP has clearly gone up, by exactly 50% (from US\$200,000 to US\$250,000).

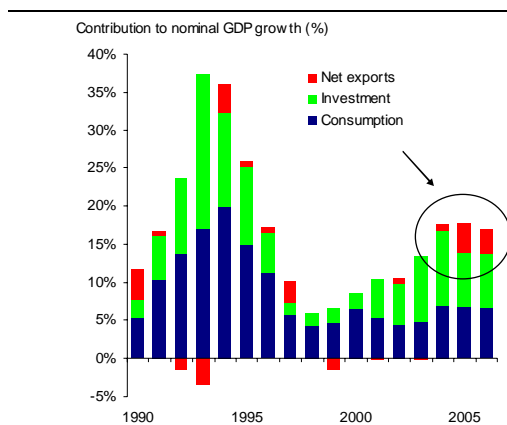
Second, despite the fact that the domestic content ratio of exports has fallen, the company has still clearly moved up the “value-added chain”, as value added per worker has risen from US\$2,000 to US\$2,500.

And third, the headline export/GDP ratio has gone up by a factor of *ten*, i.e., the headline ratio wildly overstates the actual change in underlying exposure to external demand and thus the role of exports in the economy. Why? Because the business model has changed from one of producing goods with high domestic content to “churning” goods with a very low domestic content. And this, we hope, should cure investors once and for all from looking at simple export/GDP ratios as an indicator of ... well, anything.

3. What about the rising trade surplus?

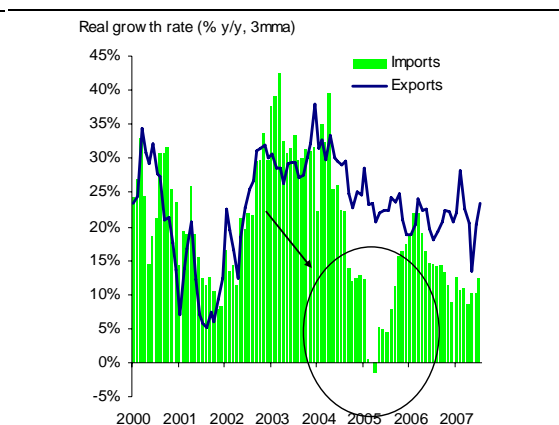
On to the next question: If we look at the GDP accounts according to expenditure categories, it turns out that rising net exports have accounted for 3.5pp of nominal growth on average for the past couple of years (Chart 8). This is a full 20% of total growth over the same period – i.e., double the 10% export contribution estimate we derived in the previous section. Have we missed something?

Chart 8: The rise of net exports ...



Source: CEIC, UBS estimates

Chart 9: ... and where it comes from



Source: CEIC, UBS estimates

Not at all; in fact, these are two completely different concepts. In the earlier sections we calculated the contribution of gross export shipments to production-side GDP. Now we are looking at *net* exports from the expenditure side.

Does it matter whether we look at exports on a gross or net basis? The short answer is that it matters enormously, and Chart 9 helps show why. China's rising trade surplus isn't due to an acceleration in export growth; exports actually slowed over the past five years. Rather, the real culprit is the sharp decline in import growth since 2004 – which, as we have argued many times before, is due to excess capacity creation in domestic heavy industrial sectors.

In other words, net exports may be contributing an unusually strong amount to overall growth, but this has nothing to do with export demand or growing external dependence. Instead, it's all about rising domestic supply displacing import suppliers ... i.e., about *reducing* exposure to the global economy.

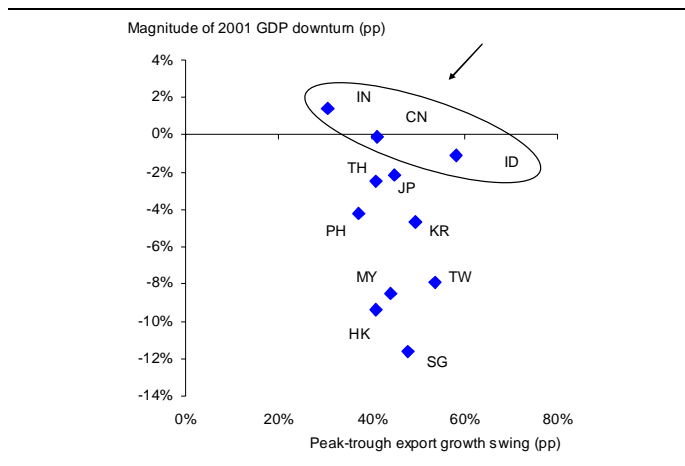
4. The proof of the pudding – exports and growth

So far we've been talking about the role of exports in the Chinese economy in a purely statistical sense. Now, finally, let's take a look at how it has worked in practice.

The best place to start is the 2001 global IT downturn. The reason we begin here is that the events of 2001 constituted a nearly perfect laboratory case for the impact of an export slowdown on the region. Not only was this the single largest negative trade shock that Asia had experienced in the past 30 years, it was also spread more or less equally across the entire region, as every country saw export growth swings of 40 to 50 percentage points. And no, China was no exception.

What happened to regional GDP growth in 2001? The actual outcome is shown in Chart 10 below; the horizontal axis shows the maximum peak-to-trough export growth swing from 2000-01, and the vertical axis shows the resulting net change in real GDP growth over the same period.

Chart 10: The proof of the pudding



Source: CEIC, UBS estimates

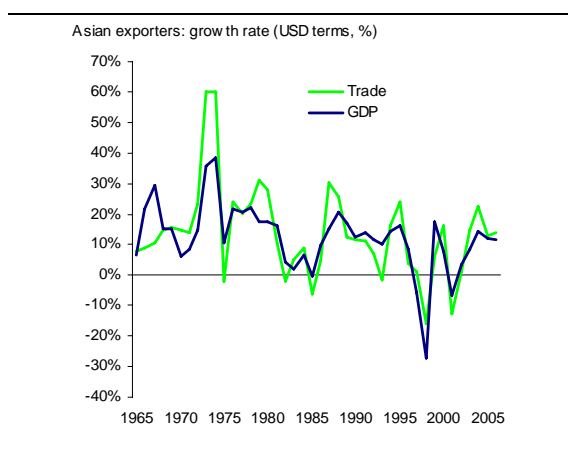
The chart could not be more revealing. If you compare with the estimated export shares in Chart 2 above, actual GDP performance was almost perfectly in line with expectations: large, domestically-oriented countries like China, India, Indonesia and Japan escaped with relatively minor damage, while small export economies such as Hong Kong, Malaysia, Singapore and Taiwan careened into sharp recession.

Again, the Chinese economy did slow – but barely, less than one percentage point, and this despite a very large negative export shock that is larger than even our worst-case scenario for the next 12-24 months (see *How Important Is the US Consumer?*, Asian Focus, 16 August 2007 for further details).

Forty years of growth

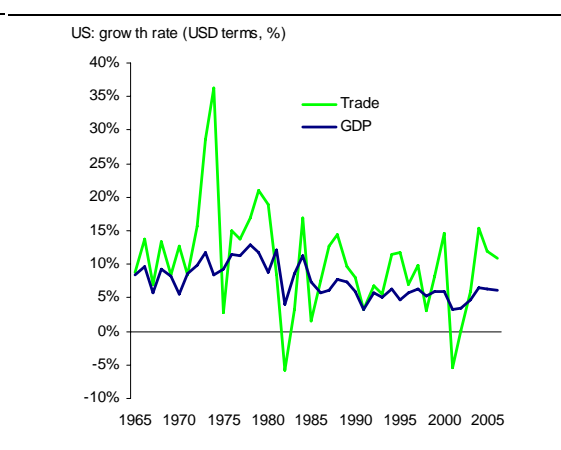
If looking at a single two-year period doesn't seem very persuasive, let's examine the relationship between trade and growth over the past 40 years. What do we mean by "export-led growth"? Essentially, we mean the picture in Chart 11, showing the annual growth rate of GDP (the blue line) vs. the growth of total trade value (the green line) since 1965 for the eight smaller Asian economies under our coverage.

Chart 11: This is export-led growth ...



Source: CEIC, UBS estimates. Note: Asian exporters are Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand

Chart 12: ... and this isn't



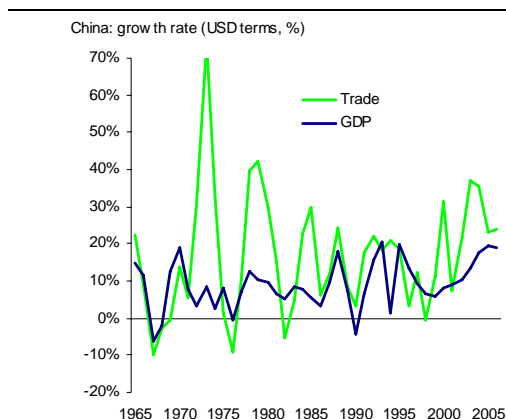
Source: CEIC, UBS estimates

As you can see, the correlation is virtually one-to-one; swings in global trade have always resulted in an immediate and equal effect on GDP in smaller Asian countries. This, in short, is export-led growth.

Now compare that picture with the one in Chart 12, which shows the same series for the US economy. Here the situation is very different. The two lines are still correlated, i.e., export trends still affect economic performance, but the blue line showing GDP growth is far more stable. In fact, even the largest shifts in external trade conditions have had only a very moderate impact on overall growth. The US is a classic example of “domestic-led growth”.

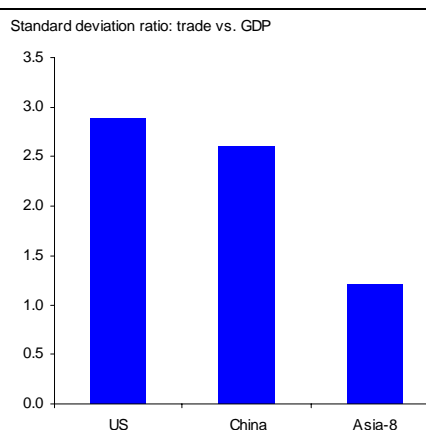
What does the relationship look like for China? Almost exactly the same as in the US. Export and trade performance have been very volatile over the past decades, but overall GDP growth has been much more stable (Chart 13 shows the relationship using official GDP growth figures; the findings don’t change at all when we use our own in-house GDP growth estimates).

Chart 13: China is a lot like the US (1)



Source: CEIC, UBS estimates

Chart 14: China is a lot like the US (2)



Source: CEIC, UBS estimates. Note: “Asia-8” refers to Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand

Of course just staring at lines in a chart can be misleading, so to drive the point home we made a formal calculation in Chart 14; the bars show the standard deviation of trade growth divided by the standard deviation of GDP growth over the period. A ratio of one means that the magnitude of trade and GDP fluctuations is identical, while a higher reading implies greater domestic independence. As you can see, the smaller Asian economies have a ratio very close to one, while the US ratio is around three. For China, the reading is ... 2.5, i.e., pretty much the same as in the US and much higher than for the rest of Asia. According to these data, Chinese growth is very domestic-led indeed.

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