Economic Watch

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Competitiveness of manufacturing exports

- **Increased costs and peso appreciation** explain the loss of competitiveness in manufacturing exports in the last five years.
- In particular, we note that improvements in **industrial labour productivity have been lower** than in the rest of the economy.
- In structural terms, the expected evolution of energy costs compromises the extent for recovering competitiveness in the sector.
- Reduced competitiveness was **partially offset by lower borrowing costs** and by a deepened currency-hedging market.
- The Chilean economy needs a persistent weaker peso to drive investment flows towards lagging export-related sectors such as manufacturing, and in this way recover the ground lost in competitiveness.

In general terms, for the last five years the Chilean industry has strayed from the upward path of competitiveness gains that it had been treading since 2002. This decline has resulted mainly from the appreciation of the Chilean peso – in an environment of multilateral dollar depreciation – and rising labour and energy costs. However, we see this as having been partially offset by lower borrowing costs – in particular foreign – and by an expansion of the currency-hedging market.

To gain a fuller understanding of how competitiveness has changed in Chile, we built indicators for the industry as a whole, and also for a range of industrial sub-sectors¹. These are based on official figures from the unit value index of industrial exports – industrial IVUX measured in USD – the nominal exchange rate and our best estimate for an index of unit labour costs in the sector (see the next sub-section for more details).

Our indicators suggest in aggregate terms that industry traced an upward path of competitiveness gains between 2003 and 2007 (which we estimate to be around 24.6%), for then partially contract in 2012 (there was a fall of 3.7% in the period). In this context, industry succeeded in improving competitiveness by close to 20% between 2002 and 2012 according to our indicator, despite the difficulties of the post-Lehman period. This is in striking contrast with the performance of the multilateral real exchange rate – used as a measure of the economy's aggregate competitiveness – which appreciated by 10% between 2003 and 2007 and another 4.2% to 2012, implying a fall of 13.8% in the period as a whole (Figure 1).

In this context, the appreciation of the nominal exchange rate in recent years – because of the multilateral depreciation of the dollar- has been the key factor underlying the decline in competitiveness. In addition to the above, labour costs have risen steeply as a result of the change in the composition of local growth, which ended up putting pressure on the use of domestic resources. This change was due to a major expansion of domestic demand, driving sectors that are more intensive in their use of higher-skilled labour. Nevertheless, we should bear in mind that behind this change of growth composition, with its major expansion in investment and private consumption, there lies a wealth effect of more favourable terms of trade (as a result of high copper prices).



1: The indicator used to measure competitiveness is based on the construction of a real exchange rate for the different sub-industries based on the following definition used for the Competitiveness Index (CI):

$$CI_{i}(t) = \frac{E(t) * IVUX_{i}(t)}{CLU_{Inductry}(t)}$$

Where E is the nominal exchange rate. Both industry IVUX and ULC use seasonally adjusted guarterly series.

Although these elements can be linked to transitory factors, there is a structural issue that also exists which compromises the outlook for industrial competitiveness over the next few years. This, specifically, is the forecast change in energy costs. This sector has had difficulty in making its investments bear fruit in recent years, mainly as a consequence of environmental issues, as a result of which numerous new projects have run aground in the courts (see sub-sections below for more details).

Our observation of the changes in the Chilean manufacturing sector's competitiveness is in general terms borne out by an analysis of the World Bank's World Integrated Trade Solutions (WITS) index². Here, we see that the conclusions drawn from the revealed comparative advantage (RCA) index for the entire Chilean manufacturing sector between 2002 and 2012 coincide. These indicators show a 31.8% increase in the comparative advantages for this period; however, this loses momentum between 2007 and 2012, growing only 6.4% (for more details on RCA, see Figure A.1 and Table A in the Appendixes). Meanwhile, market trend indicators, which evaluate advantages relative to the industrial export destination breakdown, show that Chile had an advantage over the rest of the region between 2002 and 2007, mainly as a result of the implementation of free trade agreements with higher economic growth countries, such as China. However, more recently (2007 to 2012), these manufacturing export policy advantages have been eroded, and we forecast that this deterioration has to do with the difficulty of reallocating production during post-Lehman era, a period in which external demand has been less dynamic (Figures A.2 and A.3 in Appendixes). Lastly, WITS trade indicators show that in general Chilean manufactured products succeeded in increasing their share in international markets between 2002 and 2007, but could not prevent a reduction in their share of global trade over the last five years (Charts A.4 and A.5 in Appendixes).

Changes in manufacturing competitiveness show heterogeneity between sub-sectors

On the other hand, we observed a significant degree of heterogeneity between sub-sectors in terms of their changing competitiveness. In order to identify these sub-sectors, we have classified them into three groups.

In the first place, there are those which have behaved similarly to the aggregate industry indicator, showing a major impetus in competitiveness between 2003 and 2007, which then drops off towards the end of 2012 (Figure 2). This covers the cellulose and paper, chemicals and iron and steel industrial sub-sectors. We should point out that in the case of the first sub-sector, a point-to-point comparison of competitiveness levels shows a slight loss, which we believe is explained by lower international cellulose prices, in a context of structural change in paper demand, driven by the flood of new digital mass media and the resulting move in reading habits towards digital media formats.

Secondly, we have identified a group of sub-sectors which have shown sustained rises in competitiveness in the last decade, among which the food, forestry and furniture industries play leading parts (Figure 3). However, it should be pointed out that if we disaggregate the food industry's competitiveness, we see that this increase was explained mainly by rises in international fish-meal prices. The salmon processing industry's performance, on the other hand, replicates the change in competitiveness seen in the first group of industries we analysed (Figure 4).

^{2:} For more details on this analysis, see Chapter 2 of Working Paper Nº 14/10, "Competitiveness in the Latin American manufacturing sector: trends and determinants".



Here we should mention that, between 2007 and 2012, the salmon export industry had to deal with major cost increases as a result of more demanding environmental regulations – amongst them, implementing more sophisticated fish-farming rotation systems and more exacting regulations for the entire country's fish farms, measures taken after the ISA virus broke out – and it was also affected by peso appreciation and by falls in international prices due to a major increase in the sector's installed capacity. All these factors led to a noticeable fall in competitiveness between 2003 and 2007.

Finally, forming the third group of industries, we identified those which showed a sustained loss of competitiveness in the last decade, among which wine plays a big part, given its large share over total industrial exports (Figure 5). The outlook for this sector is more complex, showing a loss of competitiveness which it has been suffering since before the sub-prime crisis. We believe that this phenomenon is largely due to the dollar's global depreciation cycle and the rise in labour costs, which it has been impossible to transfer to international prices in a context of depressed foreign demand.



Source: National Statistics Institute, Central Bank of Chile and BBVA Research.

In conclusion, over the last five years Chilean industry has reversed some of its previously positive progress in competitiveness gains since 2002. This drop-back is due to the peso appreciation –in a context of the dollar's multilateral depreciation and high terms of trade– and an increase in labour and energy costs. However, as we will see in more depth below, we have noticed that this will have been partially offset by lower borrowing costs – especially foreign ones – and by a greater deepening of the currency-hedging market.

On this subject, it is important to highlight that during the dollar's global depreciation cycle, the effect of emerging market's currency appreciation prevailed over the rise in international industrial goods prices. Thus industrial exports were redirected mainly from developed markets to Asia, although this process was only partial³. So we saw a pass-through of low inflation from developed economies to emerging ones in the form of lower tradable prices.

Finally, the reallocation of resources from the non-copper tradable sector to the non-tradable sector caused by the Chilean peso's real appreciation exerted considerable pressure on wages, a factor that we will analyse in depth in the next section. In this environment, it was difficult for several export sectors to offset the loss of competitiveness, resulting from the dollar's global depreciation, by reducing real wages. This was further reinforced in the context of an expansive activity cycle, led by internal demand and a strong increase in labour demand in the services sector. In short, export sectors were forced to absorb wage rises to the detriment of their competitiveness (see the next section for more details).

Growth in industrial labour productivity has been lower than for the rest of the economy

The improvements in average productivity of industrial labour have been systematically lower than the ones in the economy's aggregate labour productivity. So the major expansion in services sectors' average productivity has not been accompanied by similar improvements in industry (Figure 6). This is reflected in an average growth in industrial labour productivity of just 5.4% YoY between 2002 and 2013, contrasting with an average 7.8% YoY for the economy as a whole. In this context, the industrial sector has a strong relative lag in terms of labour productivity which has been secular since 2002 (Figure 7).



3: For more details see Chapter 2 in Working Documents Nº 14/10, "Competitiveness in the Latin American manufacturing sector: trends and determinantss".

Furthermore, labour costs have not adjusted to offset the gap in labour productivity suffered by the industry relative to the average for all sectors of the economy. So, labour costs in industry have increased at the same rate as in the economy as a whole (Figure 8). Tough competition for Chile's productive resources, in particular labour, has meant that industry has had to absorb these increments without being able to compensate for them with similar increases in productivity.



The above statement is illustrated well in Figure 9. According to our calculations, industrial unit labour costs (ULC) have fallen on average less than the aggregate ULC for the economy, in the ten years between 2002 and 2012 of our analysis. What is more, given that the services sector has only recently been incorporated into the national accounts, the economy's aggregate ULC show an average fall of 2.1% YoY (the mining and services sectors have been added, which have been very productive in the last few decades), while industry figures show a slight increase, averaging out at 0.01% YoY, and have significantly increased in the last two years compared to other sectors.

Energy costs increase because of high oil dependence and lags in investments in search of greater efficiency

Energy costs have risen sharply, which compares unfavourably with other OECD economies. The increase has been particularly high in the industrial sector (Figures 10 and 11). Chile's energy infrastructure grid presents major challenges to bringing in cheaper energy, and the time lag in getting these projects completed has had consequences of the first order on industrial costs in the last few years. Difficulties in materialising investment in this sector can be attributed to environmental issues, which have meant that a large number of projects have run aground in the courts.

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Source: OECD and BBVA Research

Source: International Energy Agency and BBVA Research.

With major investment in port and road infrastructure, hikes in logistics costs have been contained

According to the World Bank, Chile's relative logistics performance improved between 2010 and 2012. However, one should not forget that there has been an absolute loss in logistics competitiveness since 2007, caused mainly by investment lags in those sectors covered in the indicator (Table 1). So, we do not only observe a recovery in the absolute indicator towards pre-Lehman levels, but also an improvement in the position relative to Latin America as a whole, as well as to the countries which we consider will be the main competitors for Chilean manufacturing exports, with the exception of Mexico.

Table 1

Logistics performance, main competitors in industrial exports (scored from 1 to 5)

	2007		20	010	2012			
	Index	Ranking	Index	Ranking	Index	Ranking		
Chile	3.25	31	3.09	48	3.17	38		
Mexico	2.87	54	3.05	49	3.06	46		
Argentina	2.98	44	3.10	47	3.05	48		
Peru	2.77	58	2.80	66	2.94	59		
Colombia	2.50	80	2.77	71	2.87	63		
Latin America *	2.65		2.84		2.83			
South Africa	3.53	23	3.46	27	3.67	23		
Canada	3.92	10	3.87	14	3.85	13		
Australia	3.79	17	3.84	17	3.73	18		
Norway	3.81	16	3.93	10	3.68	21		
New Zealand	3.75	19	3.65	20	3.42	30		
World	2.74		2.87		2.87			

*Latin America is taken as a simple average of Argentina, Bolivia, Brazil, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela. Note: The scoring of the Logistics Performance Index reflects the logistics perceptions of a country based on border clearance efficiency,

Note: The scoring of the Logistics Performance Index reflects the logistics perceptions of a country based on border clearance efficiency, the quality of trade- and transport-related infrastructure, the ease of agreeing shipments at competitive rates, the quality of logistics services, the ability to follow up and track dispatches and the frequency with which shipments reach the consignee within the time programmed. The index has a 1 to 5 range: the higher the number, the better the performance. The data come from Logistics Performance Index surveys carried out by the World Bank, in association with academic and international institutions, private companies and individuals involved in international logistics.

Source: World Bank and BBVA Research.

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Some initiatives are underway to advance and facilitate the export process. These include infrastructure investment policies with proper planning for medium and long-term needs, integrating the various means of transport in a unified logistics perspective, all of which means smart design for motorways, railway lines and transport hubs within an integrated system, so that users can choose from several alternatives, weighing up the pros and cons of each. Similarly, the process of adapting the regulatory framework to international best practices and requirements has begun, which will enable the country to carry on making progress in the international arena in this sector, which requires higher service standards. Then again, implementing intermodal transport, which is the system most commonly used in international freight transport, connects the means of transport by air, sea, rail and land. Finally, up-skilling the labour force to produce the professionals and qualified personnel needed in this sector.

Thanks to the projects listed above, Chile has a stronger position than many of its main competitors in a range of logistics infrastructure quality rankings, mainly in road and port infrastructure (Figures 12 and 13).

Figure 13



Road infrastructure quality ranking 2012-13: Chile vs. main competitors (148 country ranking, 7= max; 0= min.)



Source: World Economic Forum and BBVA Research.

NZL(19) CAN (20)

Port infrastructure quality ranking 2012-13:

(148 country ranking, 7= max; 0= min.)

Chile vs. main competitors



Source: World Economic Forum and BBVA Research

However, challenges on the horizon are presented in terms of investment to improve the infrastructure of airports and railways, which are somewhat lagging behind the main competitors of Chilean manufacturing exports (Figures 14 and 15).



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Source: World Economic Forum and BBVA Research.

Also, we have seen an important increase in transport costs, which have gone up 23% since 2010 (Figure 16). Based on official statistics, we would like to point out that the main reason for this rise comes from the increase in fuel prices – with an incidence of +15.5% –, a situation that responds to an external phenomenon. However, the hike in both labour costs and maintenance service costs has had a knock-on effect of nearly 7% on the total increase in transport costs over the last four years (Figure 17).



Source: National Statistics Institute and BBVA Research.

Source: : National Statistics Institute and BBVA Research.

Source: World Economic Forum and BBVA Research.

Figure 18



Greater access to foreign borrowing and deepening of the currency hedging markets has offset the loss in competitiveness, as a result of both the dollar's global depreciation and the changes in monetary regimes in developed countries over the last five years

Although Chile is in a middling position in terms of financial development when compared with its main competitors (Figure 18 and 19), we considers that the increasing financial deepening over the last few years have helped to mitigate the negative effects on industrial export competitiveness resulting from the dollar's global depreciation —and the changes in monetary regimes observed in developed countries—, in a context of greater wage pressure.







Source: World Economic Forum and BBVA Research.

Source: World Economic Forum and BBVA Research.

Is a stylized fact that an important part of the volatility observed in industrial export competitiveness comes from fluctuations in the nominal exchange rate. In this context, expansion of currency-hedging markets will allow industries to ride out the real exchange rate's excessive volatility. So, the disruption in industrial export competitiveness in the last five years suggested by our indicators may be somewhat overstated since it does not factor in the competitiveness advantages associated with the development of the financial market.

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In particular, we have identified two elements which have helped the country to cope better with nominal exchange rate volatility and competitiveness: better and more access to funding from abroad and the growth of the hedge derivatives market over the last few years.

On the one hand, the percentage of foreign currency deposits in the Chilean financial system has gone up considerably from an average of 9.0% in the 2003-2007 period to an average of 12.5% in the 2008-2013 period. This reflects more access to dollar funding by the non-financial corporate sector in a context of lower external funding costs, attributable to a change of regime in the monetary policy of developed economies (Figures 20 and 21).

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Similarly, figures of financial account in the balance of payments show us that absolute flows of net derivative transactions record a change of regime similar to the banking sector's funding pattern, where transactions in derivatives – with an important currency hedging component – have gone up from an annual average of USD375mn between 2003 and 2007 to USD1.509mn between 2008 and 2013 (Figure 22).



Source: Central Bank of Chile and BBVA Research.

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Conclusions

Over the last five years Chilean industry has lost ground in its previously upward journey of competitiveness gains since 2002. This decline is characterized by the peso appreciation –in a context of multilateral dollar depreciation– and rising labour and energy costs. However, we see this as having been partially offset by lower borrowing costs – in particular foreign – and by a deepening of the currency hedging market.

While these factors can be related to transitory phenomena, a structural element exists which compromises the outlook for industrial competitiveness over the next years, and this is the expected change in energy costs. This sector has had difficulty in materialising investment as a consequence of environmental issues which have meant that a large number of new projects have run aground in the courts.

An alternative conclusion attributes a large amount of the loss of competitiveness to reasons connected to the bonanza in commodities prices, which led to a very positive cyclical position for the economy —highly favourable terms of trade— with an appreciation of the peso and heavy investment and labour demand in mining, passing on the hike in labour costs to other non-traditional export sectors. However, we forecast that this phenomenon, the so-called *Dutch disease*, is now coming to an end.

Finally, and whatever the cause –global dollar depreciation because of the US monetary cycle, or alternatively, Chilean peso appreciation due to commodities *supercycle*– we believe that as the Chilean peso's loss of value becomes persistent and the investment cycle in mining reaches maturity, it is to be expected that investment will start looking at those lagging sectors. In this context, we believe that the Chilean economy not only requires a relatively more depreciated peso, but also an exchange rate persistently at higher levels. So, a major part of the recent loss of competitiveness may be reversed and the challenges that remain will be in reducing energy costs and, to a lesser extent, in improving logistics infrastructure.

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Appendixes

Figure A.1



Source: WITS and BBVA Research.



* Bubble size shows the market share of the country's exports. Above the 45° line, exports to that market have grown more in that country than in the world and, as such, the country has increased its share of world exports. Source: WITS and BBVA Research.



* The bubble size shows the product's share in the country's exports while colours classify the products by: • Primary, • Basic manufactured goods, •Non-basic manufactured goods. In addition, each product is identified by two HS 2002 classification digits. Above the 45° line, product exports have grown more in the country than in the world, and as such the country has increased its share of world exports. Source: WITS and BBVA Research.

Table A Revealed Comparative advantage (RCA) indicator

	Argentina		Brazil		Chile		Colombia			Mexico			Peru					
	2002	2007	2012	2002	2007	2012	2002	2007	2012	2002	2007	2012	2002	2007	2012	2002	2007	2012
Animal products	3.4	4.1	3.4	2.7	3.5	2.7	4.9	3.7	4.2	0.6	1.1	0.2	0.3	0.4	0.5	1.3	1.1	1.1
Plant products	9.6	12.2	9.6	4.2	4.2	5.0	5.8	3.0	3.2	8.1	6.2	3.5	0.9	1.1	1.0	4.4	3.0	3.6
Edibles	5.0	6.4	6.7	4.3	3.9	4.2	2.9	1.9	1.8	1.4	1.5	0.7	0.7	0.9	0.9	5.7	3.0	2.9
Mineral products	2.4	1.8	1.6	10.3	9.6	10.5	15.6	17.5	13.8	1.1	0.5	0.1	0.5	0.6	0.8	24.6	25.8	19.2
Fuels	2.0	0.9	0.5	0.4	0.5	0.6	0.2	0.1	0.0	4.3	2.7	3.5	1.0	1.1	0.7	0.7	0.6	0.6
Chemical products & associated	0.6	0.6	0.9	0.5	0.6	0.6	0.7	0.4	0.6	0.7	0.6	0.2	0.3	0.3	0.3	0.3	0.2	0.2
Plastics and rubbers	0.8	0.6	0.6	0.6	0.7	0.5	0.3	0.2	0.3	0.8	1.0	0.5	0.4	0.5	0.5	0.3	0.3	0.3
Hides and skins	4.0	3.4	2.4	2.1	2.3	1.4	0.2	0.1	0.1	1.4	1.4	0.6	0.2	0.2	0.2	0.3	0.2	0.2
Wood products	0.5	0.6	0.5	2.1	2.1	1.8	3.7	2.8	3.2	0.7	1.0	0.2	0.2	0.3	0.3	0.7	0.5	0.4
Textiles	0.3	0.3	0.2	0.3	0.3	0.4	0.1	0.1	0.0	1.0	1.2	0.3	1.1	0.7	0.5	1.8	1.4	1.0
Footwear and headgear	0.1	0.1	0.1	2.8	1.7	0.7	0.1	0.2	0.0	0.2	0.5	0.0	0.2	0.2	0.3	0.1	0.1	0.1
Stone and glass	0.2	0.2	0.8	0.8	0.6	0.3	0.4	0.5	0.5	1.3	1.5	1.9	0.6	0.7	1.1	2.7	3.1	3.5
Metals	1.0	0.5	0.5	1.6	1.2	1.0	4.3	4.5	5.3	0.6	1.0	0.4	0.6	0.6	0.6	2.9	2.0	1.5
Machinery and electrical	0.1	0.1	0.1	0.4	0.4	0.3	0.0	0.0	0.0	0.1	0.1	0.0	1.3	1.4	1.4	0.0	0.0	0.0
Transport equipment	0.5	0.9	1.6	0.9	1.0	0.8	0.1	0.1	0.0	0.2	0.3	0.3	1.6	1.7	2.4	0.0	0.0	0.0
Miscellaneous	0.2	0.1	0.1	0.3	0.2	0.2	0.1	0.0	0.0	0.1	0.2	0.1	1.3	1.2	1.3	0.1	0.1	0.0

Source: WITS and BBVA Research.



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