Analysis

Measuring cost-competitiveness in Finland

Finnish economy | 22 June 2017 | Lauri Kajanoja

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How should we measure cost-competitiveness in Finland? A look at cost-competitiveness indicators in use at the Bank of Finland



Employment, the tradable sector and the effects of shocks

The term ‘competitiveness’ can mean various things depending on context. Sometimes it refers to

an economy's long-term growth opportunities, which are strongly dependent on e.g. economic institutions. For the purposes of this article, competitiveness is understood as cost-competitiveness.

What is cost-competitiveness? It looks at the external balance potential in an economy from the point of view of costs. A high potential means that output and employment can develop favourably in the tradable sector, i.e. in those industries facing direct external competition. However, external balance is not solely conditional on labour cost developments relative to trading partners. It can also be affected by import demand in other countries, a variety of shocks to industries and firms or other developments not directly related to the costs of production.

Cost-competitiveness indicators measure change in domestic costs and unit profitability relative to other countries. Such measures often look at labour costs in relation to firms' ability to compensate their workforce. If this lags behind labour costs, unit profitability in the tradable sector tends to suffer.

The indicators of cost-competitiveness used internationally are many, but only part of them are relevant under Finnish circumstances.

At the moment, there appears to be less international interest in measuring cost-competitiveness than in the immediate post-WW2 decades. Under Bretton Woods and other fixed exchange rate systems, interest in cost-competitiveness indicators was higher, but it began to wane once floating exchange rates became the norm. However, introduction of the euro single currency has lent fresh relevance to the topic.

Estimating developments in cost-competitiveness gains importance when a small economy does not have a floating-rate currency of its own. A shock with a negative impact on revenues in the economy and particularly in its tradable sector can result in a need to reduce domestic costs relative to other countries to help rebalance the economy and support employment growth. With a floating currency, this adjustment can be expected to take place through currency depreciation. That adjustment mechanism is not available to a small country in a monetary union. Adjustment might thus be partially slowed by asymmetries related to wage rigidity, for nominal wages are generally not widely cut in response to economic imbalances.

From the point of view of employment growth, it is important to avoid any major weakening of cost-competitiveness and to find ways, where necessary, to adjust domestic costs vis-à-vis costs abroad. This was also the conclusion of the report by Finnish experts in relation to the adoption of the single currency published in 1997.[1] Improving cost-competitiveness presents a particular challenge if prices and costs are increasing very slowly in other countries. Even a stagnation of

domestic costs would not then bring swift improvements in cost-competitiveness.

How do changes in cost-competitiveness affect the economy?

The macroeconomic impact of better cost-competitiveness depends on whether there is ample spare capacity, e.g. in the form of unemployment. If unemployment is already low and tradable sector capacity is in full use, little change can be expected in output or employment. This holds true regardless of the fact that a reduction in relative costs can result in some migration of output and resources from the non-tradable sector to the tradable sector, with an improvement in its relative unit profitability.

If, however, unemployment is unusually high and unit profitability in the tradable sector unusually low, then improvements in cost-competitiveness can be expected to have a tangible positive impact. In such a scenario, tradable sector corporations are better able to place offers that are not only profitable but also result in closing a deal, taking into account the price level prevailing on global markets. Access to finance and the cost of finance also play a role, since expanding output in the tradable sector may require investments to be made with external financing. Empirical research suggests such impacts are plausible.[2]

Output and employment growth in the tradable sector enhance potential for employment growth in other industries. Higher output in the tradable sector improves income creation in the economy. This supports domestic demand and consequently output and employment in the non-tradable sector. In addition to tradable sector revenues, there are a number of other factors that also affect output and employment in the non-tradable sector. Two such factors are fiscal policy and technological advances that improve productivity in these sectors.

Changes in cost-competitiveness are generally not considered to have an impact on external balance over the very long term. Cost-competitiveness can be considered to have an 'equilibrium level' where conditions for production and employment creation in the tradable sector are in line with their long-term trends. If, for any reason, cost-competitiveness were to veer too far from this equilibrium, adjustment mechanisms in the economy would begin to steer it back towards equilibrium.

A considerable weakening of cost-competitiveness from its equilibrium level would lead to lower output and employment in the tradable sector and lower income creation in the economy. This would result in diminishing wage pressures, a more moderate rise in labour costs and hence a gradual improvement in cost-competitiveness. A similar but opposite adjustment process would be triggered if cost-competitiveness were to improve beyond its equilibrium level.

The cost-competitiveness adjustment process described above can be swift, but it can also take a number of years. It is, however, not a long-term process that would require several decades.

Although changes in cost-competitiveness should not be expected to affect the external balance of an economy over the very long term, they may affect macroeconomic developments. On one hand, a significant temporary weakening of cost-competitiveness can have long-term effects on an economy if the resulting reduction in employment increases structural unemployment. Other negative long-term effects could include a deterioration of production organisations, business networks and capital stock in the tradable sector.

On the other hand, various positive shocks on cost-competitiveness, such as higher labour productivity as a result of innovations, can have a lasting positive impact on the growth potential of an economy and its prosperity. These impacts can remain even after the impact of the shocks on cost-competitiveness and external balance fade away.

The importance of domestic intermediate goods

Developments in labour costs have an impact on potential output in the tradable sector both directly through wage costs in these industries and indirectly through the cost of intermediate goods purchased from the non-tradable sector. Price developments in domestic intermediate goods are partially determined by labour costs in the corporations producing them.

A typical manufacturing company with export production would buy intermediate goods from both domestic manufacturing and non-manufacturing companies. The manufacturing industry purchases a whole range of different services and also construction as intermediate goods.

Mankinen et al. (2012, 33) estimate that the rise in manufacturing costs resulting from a 1% wage increase in the non-tradable sector would be similar to that resulting from a 1% wage increase in manufacturing itself. The size of the impact derives from the importance of domestic intermediate goods in manufacturing and from the labour intensity of the sectors producing them.

Cost-competitiveness indicators are based on labour cost and labour productivity developments relative to other countries. Chart 1 illustrates the role these factors play for tradable sector costs and macroeconomic developments.

Chart 1.



Measures of cost-competitiveness

A measure of cost-competitiveness tracks changes in a domestic cost indicator relative to changes in the same indicator in other countries (expressed in the same currency). Domestic developments may be compared with the weighted average of developments in other countries, with each country weighted in accordance with its importance for Finnish foreign trade. This is known as a real effective interest rate. For Finland, another plausible comparison would be against a euro area average.

No single, comprehensive measure of cost-competitiveness can deliver the best answers to all questions in all circumstances. It therefore makes sense to look at many indicators to form a picture of the developments from different angles.[3] However, not all measures are useful for the purpose of looking at recent developments in Finland's cost-competitiveness.

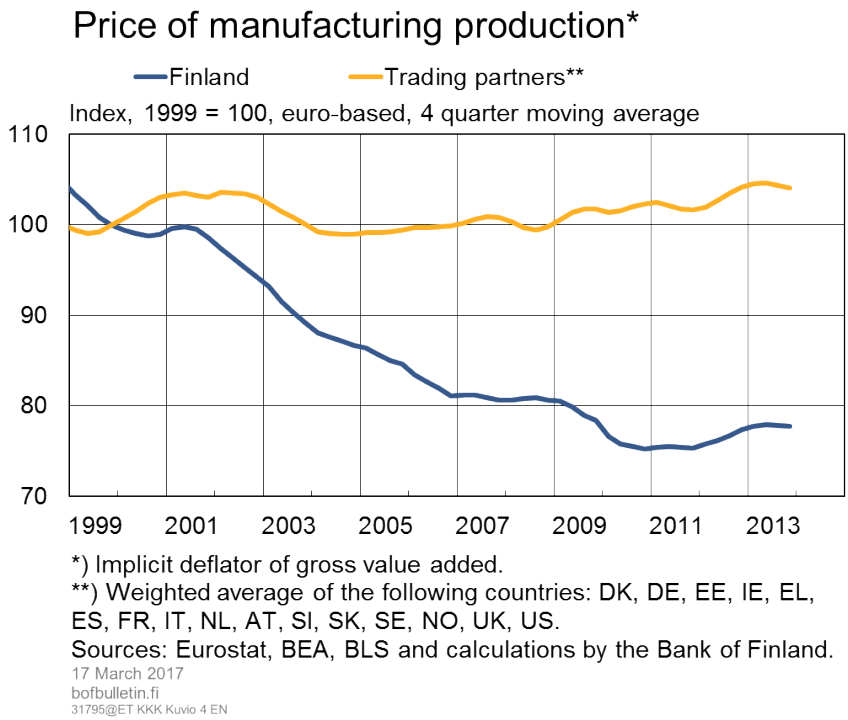
Labour cost

Perhaps the simplest of measures compares the developments in labour cost per employee or hours worked across countries (expressed in the same currency). Such comparisons are meaningful when comparing developments in similarly advanced economies. It is useful to examine labour costs across the whole economy, since costs (and by extension profitability) in the

tradable sector are affected by labour costs in all industries.

When looking at the longer term and comparing developments with other countries on a wider scale, the most practicable indicator of costs is compensation per employee (as per National Accounts). The measures in Chart 2 are based on this indicator.

Chart 2.



Changes in relative labour costs expressed in the same currency are derived from changes in labour costs expressed in national currencies, but they are also affected by changes in exchange rates. A strengthening of the domestic currency means that domestic costs rise relative to countries with different currencies.

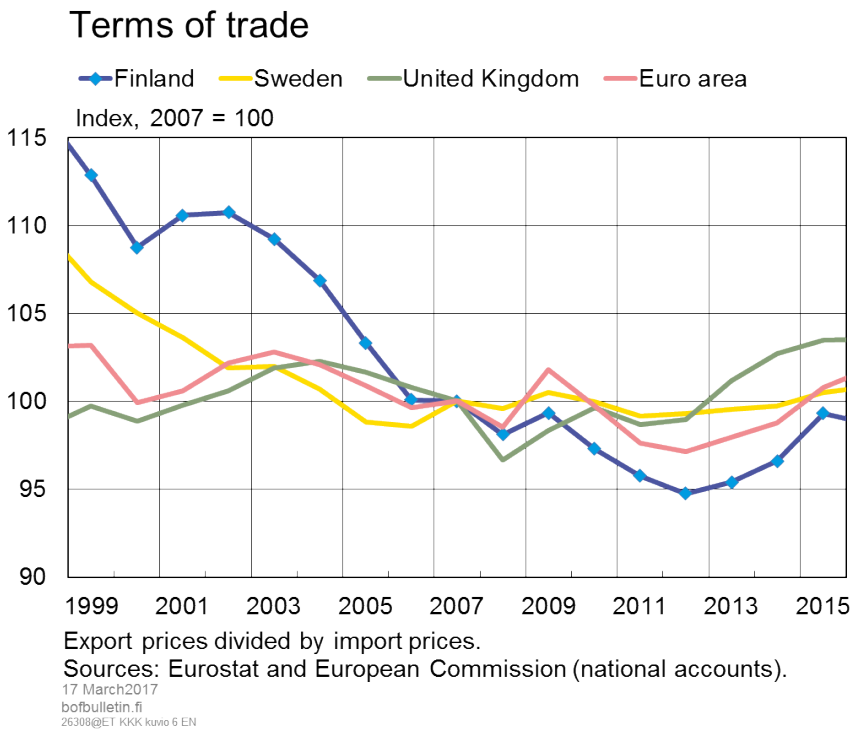
Profitability in the tradable sector

In measuring cost-competitiveness, relative labour cost developments may be looked at in relation to some indicator of changing profitability and, by extension, of the change in firms' ability to compensate their workforce. Such measures are more closely connected to potential output and employment in the tradable sector than mere relative labour costs. One possible indicator would be nominal unit labour costs, which look at labour costs in relation to volume growth of output. For the Finnish manufacturing industry, however, this measure of cost-competitiveness is currently not useful, as shown below.

When aggregate change in labour costs is looked at in relation to changes in the value of output, the resulting indicator measures changes in real unit labour cost or the wage share, i.e. labour compensation in relation to nominal gross value added. At the same time, it functions as an inverse indicator of unit profitability.

The indicator of unit profitability referred to in the previous paragraph is not a direct measure of return on invested capital (ROIC) but rather describes how much of the gross value added remains after labour cost. A more appropriate indicator of the conditions for production and employment creation in the tradable sector would be domestic ROIC in relation to ROIC in other countries, for which unfortunately no reliable and timely international comparisons are available. By contrast, for real unit labour costs such comparisons are possible on the basis of available data, and their relative changes can be used as an indicator of cost-competitiveness (see Chart 3).

Chart 3.



Profitability in manufacturing industry is directly affected by manufacturing labour cost and all factors which have an impact on gross value added at current prices, such as volume of output, sales prices and the price of foreign and domestic intermediate goods used in manufacturing. Profitability in the manufacturing industry is thus affected by the price of labour also in those domestic industries producing intermediate goods.

The cost-competitiveness indicator in Chart 3 is calculated on the basis of manufacturing data,

which can provide a rough estimate of the situation in the tradable sector. There are always timely and internationally comparable data available for the manufacturing sector, which also accounts for more than 80% of Finnish exports. In addition to goods, manufacturing also accounts for a large share of services exports.

The tradable sector of an economy can be more specifically defined as those industries that face direct international competition. To get a rough idea of the possible bias resulting from restricting analysis to the manufacturing industry, one can compare labour cost and unit profitability developments between manufacturing and a differently defined tradable sector.

Unit profitability is a useful indicator of cost-competitiveness in the tradable sector. As a measure of cost-competitiveness in the whole economy it is less useful. Potential output and employment in the tradable sector are not directly affected by unit profitability outside the tradable sector (i.e. in the non-tradable sector).

Non-financial corporations in the non-tradable sector do not face direct international competition, and thus their prices and costs can rise simultaneously without jeopardising unit profitability in that sector. Such developments, however, reduce cost-competitiveness. Similarly prices and costs in the non-tradabel sector could fall simultaneously without changing profits in the non-tradable sector, which would improve the cost-competitiveness of the economy.

Relative nominal unit labour costs in manufacturing are not a useful indicator for Finland

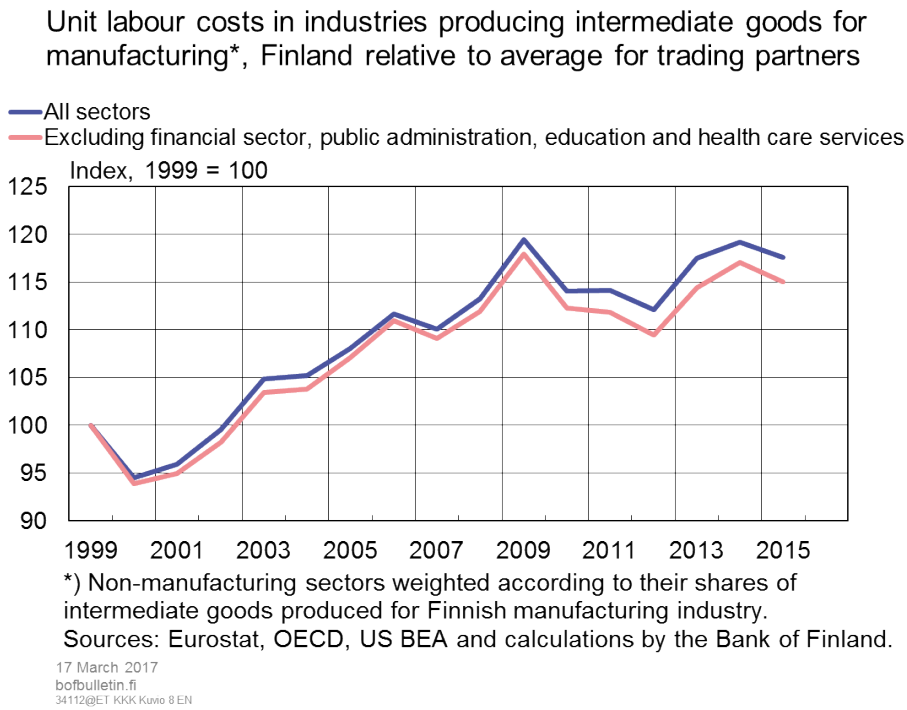
Cost-competitiveness is often measured via relative nominal unit labour costs in manufacturing. This indicator is straight-forward to interpret if there are no structural differences in manufacturing between the countries that could be relevant for relative price developments. This can be illustrated by imagining an extreme situation where trade between all countries is limited to a single product of uniform quality with just one price on international markets. A country with low unit labour costs would naturally be well positioned in such international competition, especially if it is further assumed that the prices of intermediate goods needed for production were the same across countries. In such a case, lower nominal unit labour costs in the tradable sector would directly enhance profitability.

In reality, industries in different countries are structurally different. The relevance of unit labour costs as an indicator of cost-competitiveness is limited if price developments vary greatly between industries and if countries have different industrial structures. The relevance is particularly small for a country where the share of industries with divergent price developments is large.

For Finland, the measure is not useful at the current juncture for analysing cost-competitiveness

over the past several years.[4] Earlier price developments in the Finnish tradable sector were highly divergent in international comparison (see Chart 4). Prices went down because output growth in volume terms was not met by a commensurate increase in output value. Unit profitability and corporate capacity for labour compensation are not dependent on output volume but on output value growth. Growing export production increases neither the share of corporate profits available to workers nor Finnish welfare unless accompanied by growth in the euro value of export production.

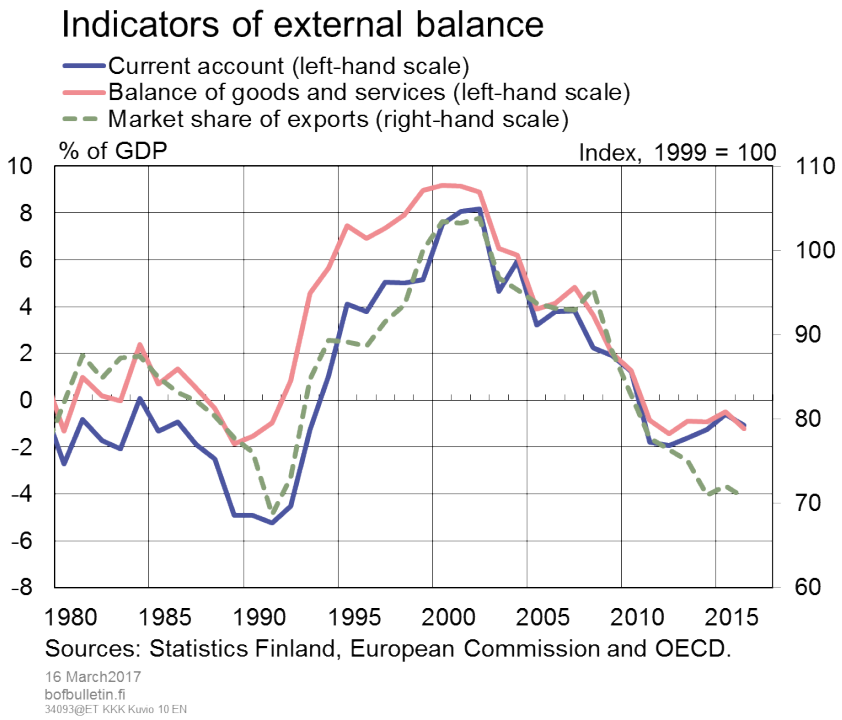
Chart 4.



Behind the divergent price developments in Finnish manufacturing is the industrial structure. The relative importance of the paper industry continues to be marked, and paper products suffered from weak international price developments for a long time. The electronics industry was also exceptionally prominent in the golden years of Nokia mobile phone production. A statistical fall in prices is also recorded for this fast-paced industry.

The fall in statistical electronics prices is due to the way price indices are formed. Improvements in product quality are recorded as a fall in product prices. Thus, statistically the price of mobile phones falls even if the average sales price expressed in euro remains unchanged. Output volume growth is calculated as the difference between output value change and price change, and thus a statistical fall in prices increases output growth relative to output value (see Chart 5).

Chart 5.



The past output volume growth in the electronics industry did not translate into a similar growth in revenues for electronics companies. Volume growth was mainly an indication of improvements in product quality, which benefited the mostly foreign buyers of these products. Such output growth coupled with a falling price index weakens the conditions for production and employment creation in the tradable sector.

Divergent price developments play an important role in measuring Finland's cost-competitiveness. This is largely related to developments in the late 1990s and the first post-millennium decade. This was the heyday of the mobile phone industry in Finland. Cost-competitiveness is usually estimated over a period of several years. It will thus take some years before the post-millennium decade is so far in the past that the divergent price developments of the time can be disregarded in the interpretation of cost-competitiveness indicators.

Terms of trade adjusted unit labour costs for the economy as a whole

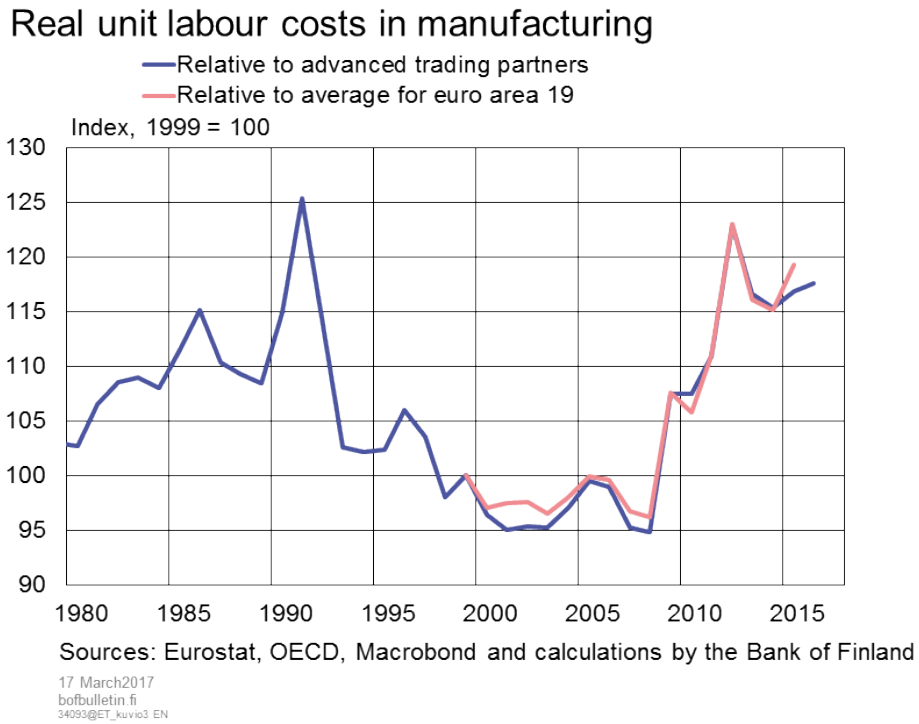
Divergent price developments in manufacturing have led to an unusual weakening in the terms of trade for the economy as a whole (Chart 6). In other words, export prices have fallen considerably in comparison to import prices. With the weaker terms of trade, real domestic income growth has

been lagging behind real GDP growth.[5]

Chart 6.



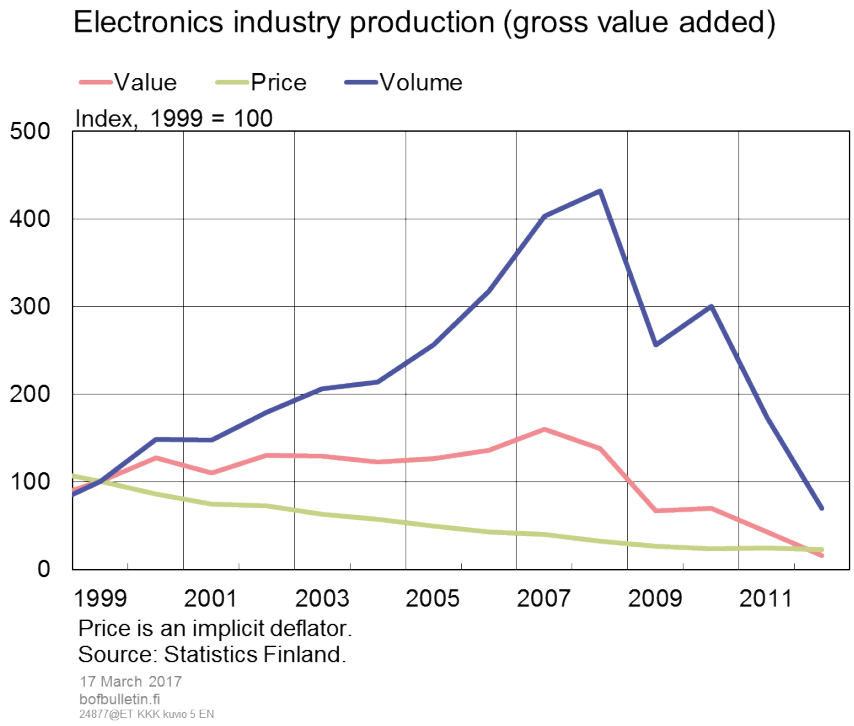
Chart 7.



As a result of the unusual developments in the terms of trade, relative nominal unit labour costs for the whole economy are not as useful for measuring cost-competitiveness in Finland as they are in most other countries. This is especially true for developments in the post-millennium decade. The same measurement issue has been identified in other countries. Real GDP growth gives a distorted picture of real income growth in an economy if at the same time the terms of trade are undergoing a considerable change.[6]

One option for taking unusual terms of trade developments into account in measuring cost-competitiveness is to use terms of trade adjusted unit labour costs for the whole economy.[7] No such indicator of cost-competitiveness would seem to be in general use. It is nevertheless based on a traditional approach: terms of trade developments need to be taken into account alongside relative unit labour costs in assessing whether labour cost developments are balanced.

Chart 8.



This useful indicator is obtained by comparing labour costs relative to labour productivity while calculating changes in productivity on the basis of terms of trade adjusted GDP. When the terms of trade weaken, changes in the terms of trade adjusted GDP account for the diminished impact of real GDP changes on real domestic income . Terms of trade adjusted real GDP can also be referred to as real gross domestic income.[8]

Terms of trade adjusted unit labour costs increase as a result of higher labour costs, lower labour

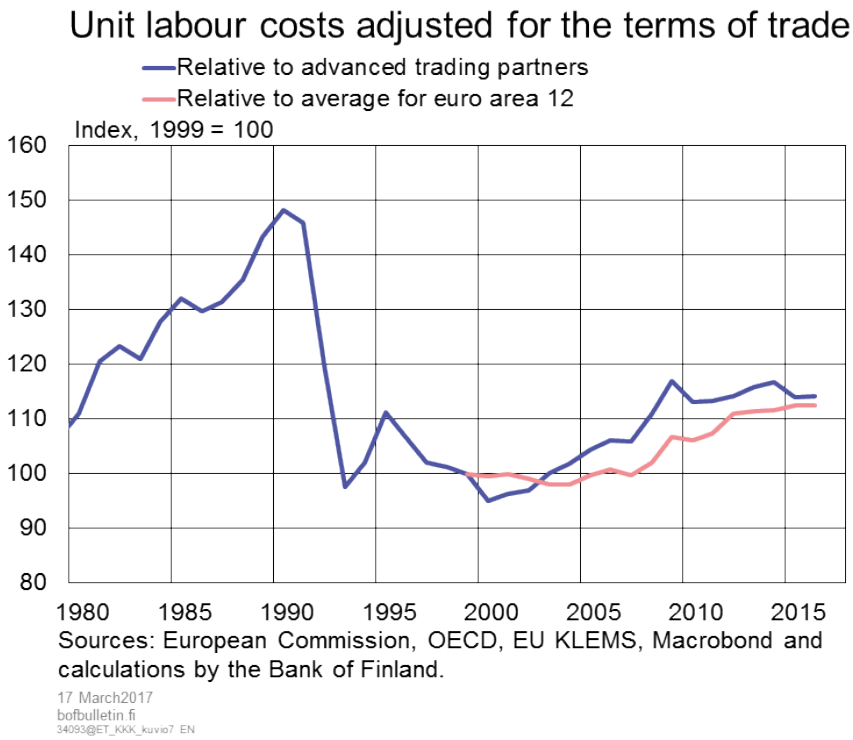
productivity or weaker terms of trade. Thus, changes in these variables relative to other countries, along with changes in exchange rates, affect thismeasure of cost-competitiveness.

Unit labour costs in the non-tradable sector

Cost developments in sectors serving the domestic market affect the price of intermediate goods for the tradable sector and by extension unit profitability in the tradable sector. No direct statistics are available on the price of domestic intermediate goods used in manufacturing. Price and cost developments in industries producing intermediate goods for manufacturing serve as a proxy.

One possible measure of cost-competitiveness would be the development of unit labour costs in those domestic industries producing intermediate goods for manufacturing (see Chart 8).[9] Nominal unit labour cost developments in these industries are compared with Finland's trading partners.[10] Here unit labour cost is calculated as a weighted average where the weight of each domestic industry represents its share in domestic intermediate goods used in Finnish manufacturing industry. The greatest weights are given to wholesale and retail trade, transportation and storage, food and accommodation services as well as professional, scientific and technical services.[11] A comparison can also be made excluding financial and public services, as measuring productivity in these sectors entails a great deal of uncertainty.

Chart 9.



Measures not useful for Finland

Price or cost-competitiveness is also sometimes measured by comparing consumer prices in different countries. Using this measure has the benefit that timely data are readily available from a large number of countries. Its weakness from the point of view of estimating the conditions for production and employment creation in the tradable sector lies in the fact that it focuses on the price of domestically sold consumer goods – which bear no direct relation to costs in the tradable sector.

As noted above, several commonly used measures of cost-competitiveness are not useful under the particular circumstances of Finland, in particular relative (nominal) unit labour costs in manufacturing and, to some extent, relative unit labour costs in the economy as a whole. This is partially due to the industrial structure and, by extension, to divergent price developments. The same is true for measures based on export prices or on the price of value added.

Relative export prices have been used relatively widely in international literature for the measurement of competitiveness. The advantage of this approach is that export prices look at precisely those goods subject to international trade. The downside is that producers lowering their sales prices vis-à-vis other producers might simply be accepting a temporary cut in profits. The impact on trade flows might thus be transient. Longer-term effects could arise if a producer's

costs were to rise.

Export prices are generally represented by an average export price, which leads to the problem that country differences in the structure of export industries can have a notable impact on the measure. The problem is in essence the same as with comparing nominal unit labour costs in manufacturing. If, for example, a country is specialised in producing export goods with rapid productivity growth and falling prices, its cost-competitiveness might be judged to be good even though in reality the lower export prices would not be having a positive impact on the conditions for production and employment creation in the tradable sector.

Many export companies are in highly competitive fields and have no say in price levels. Theoretically, if this were true of all industries, relative export prices would only be illustrative of the structure of export industries.

In the case of Finland, an unusual industrial structure has made relative export prices irrelevant as a measure of cost-competitiveness. This can be traced back to the importance of Nokia mobile phone production in Finland over a lengthy period of time. In the mobile phone industry, prices fell very quickly.

Yet another proposed measure of competitiveness is developments in the price of value added vis-à-vis trading partners. In the case of Finland, this indicator is just as problematic as relative export prices. As a result of the earlier unusual export structure in Finland, the terms of trade deteriorated quickly over a prolonged period, in particular with the sinking export prices. This deterioration was directly transmitted to the development of the price of value added, which therefore cannot be taken as a sign of improving cost-competitiveness.

Comparator countries: advanced trading partners and the euro area average

In empirical international literature cost-competitiveness is mainly measured by comparing a country with a broad group of trading partner countries. This is the idea of real effective exchange rates, which can be taken as one of the most important and longest-standing form for measures of price and cost-competitiveness in use today.[12]

When measuring Finland's cost-competitiveness, the most useful group of comparators is a broad group of Finland's advanced main trading partners. When cost-competitiveness is looked at vis-à-vis the weighted average of this group, changes in the measure can be expected to indicate changes in Finland's external balance.

Restricting the comparator group to traditional industrial economies excludes some countries that

are important for Finnish exports, e.g. China, Russia, Estonia, Poland and South Korea. Including these countries would, however, cause difficulties in interpreting the data over a longer period of time. At a markedly different level of economic advancement, cost levels vis-à-vis Finland can be expected to follow a trend with no impact on the conditions for production and employment creation in the tradable sector in Finland.[13] Restricting the comparison to advanced economies also makes sense because these are the only countries for which the necessary comprehensive statistical data are available, particularly over longer time spans.

Restricting the comparison to traditional industrial economies excludes some key long-term trends in the international division of labour, such as China's integration into the global economy. For the interpretation of the indicators described in this article, such trends present no relevant obstacles. In Finland, the impact of these trends is broadly similar to those in other advanced economies.

Finnish cost developments are occasionally compared against a relatively small group of countries, primarily Germany and Sweden. These are useful comparator countries for the Finnish economy in many ways, but for cost-competitiveness a comparison with such a small group would not be meaningful.

In addition to the broad group of trading partners, another key comparator is the euro area average. If Finland's cost-competitiveness diminishes vis-à-vis euro area countries, changes in the external value of the euro cannot bring about a change. In this article, comparisons between Finland and the euro area average are made, as applicable, between Finland and the average of the first twelve countries to have joined the euro area (euro area 12). The reasons for the exclusion of other euro area countries are the same as those behind restricting the group of trading partners to traditional industrial economies, and relate to the interpretation of the data.

Index and country weights

The cost-competitiveness indicators in this article showing developments in Finland relative to its trading partners are in the form of weighted geometric means. Thus the indicator = $\exp \Sigma_i [w_{i,t} \ln(x_{i,t})]$, where $x_{i,t} = (X_{fin,t}/X_{fin,t-1})/(X_{i,t}/X_{i,t-1})$, $X_{fin,t}$ is the value of X in Finland at time t, $X_{i,t}$ is the value of X in country i at time t and $w_{i,t}$ is the country weight of country i at time t. Depending on the indicator, X can stand for compensation per employee, real unit labour cost, nominal unit labour cost or nominal unit labour cost adjusted for the terms of trade. All values are expressed in the same currency.

Country weights follow the double-weighting scheme used in BIS calculations and take into

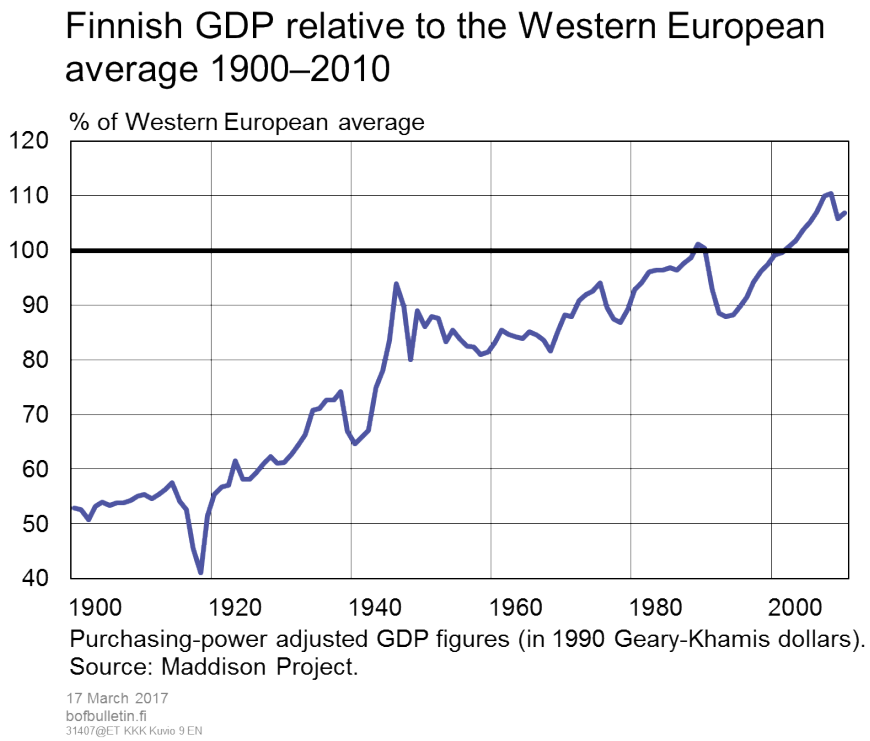
account third-market competition.[14] The weights change over time to reflect the country structure of trade in each time period. The following countries are included in the trade-weighted indicators (most recent country weight in brackets): Austria (2.1), Belgium (5.5), Denmark (3.8), France (6.8), Germany (25.0), Italy (6.0), Japan (3.8), the Netherlands (8.2), Norway (3.1), Spain (2.8), Sweden (15.7), Switzerland (2.1), United Kingdom (6.0) and United States (9.0).

Year and period of comparison

The indices in the charts in this article generally use 1999 as the year of comparison. This means that the value of each index in 100 in the year 1999. The selection of the year is irrelevant for changes in the index over time, i.e. any other year selected as the comparison year would lead to exactly the same shape of chart with the sole difference being the numbers on the vertical axis. Index value 100 should not be read as referring to any kind of equilibrium cost-competitiveness.[15] In 1999 Finland's cost-competitiveness was above its long-term trend by all useful measures.

When measures of cost-competitiveness draw a comparison between similarly advanced economies, it makes sense to only show a period of time when the economies are broadly similarly advanced. Finland's GDP grew to near the Western European average in or around the early 1980s (see Chart 9). Measures of Finland's cost-competitiveness thus show a period of time from 1980 onwards. It is worth pointing out that economic structures have also undergone significant changes both in Finland and its comparator countries since 1980. This needs to be taken into account when making detailed interpretations of changes in the cost-competitiveness measures.

Chart 10.



Why compare changes rather than levels?

This article makes comparisons not in terms of cost levels across countries but in terms of cost developments in Finland vis-à-vis other countries over time. This rests on the fact that differences in levels of cost-competitiveness indicators should not be expected to exhibit close linkages with differences in levels in terms of external balance. In addition, data on country differences in cost levels are not as readily available as data on cost developments over time. Differences in cost levels have rarely been used in empirical international literature on the topic of cost-competitiveness.

The level of labour costs in Finland are sometimes compared with that in other Western European countries. The comparison may be interesting for various reasons, but it is not directly illustrative of the conditions for production and employment creation in the tradable sector. Low cost levels do not seem to be typically related to a strong external balance for Western European economies.[16]

Looking at more heterogeneous countries than those in Western Europe, there is no major justification for expecting a stronger empirical link between cost-competitiveness levels and external balance. The low wage levels in Africa in comparison with other continents do not mean a current account consistently in surplus for Africa.

Similarly, we devote little attention to differences in the level of real unit labour costs in manufacturing industry, even though developments over time are reviewed above. Country differences in these levels do not offer a simple interpretation for the measurement of cost-competitiveness, as countries have different industry structures and potentially also use different methods in producing statistics.

It is in practice impossible to compare levels of nominal unit labour costs across a broad group of countries, because the statistics are not available.[17] For a comparison, statistics on price level differences between countries are required. Indicative comparisons can be made, but there does not seem to be any link between differences in levels of unit labour costs and a country's external balance, at least not any link that would lend itself easily to interpretation.[18]

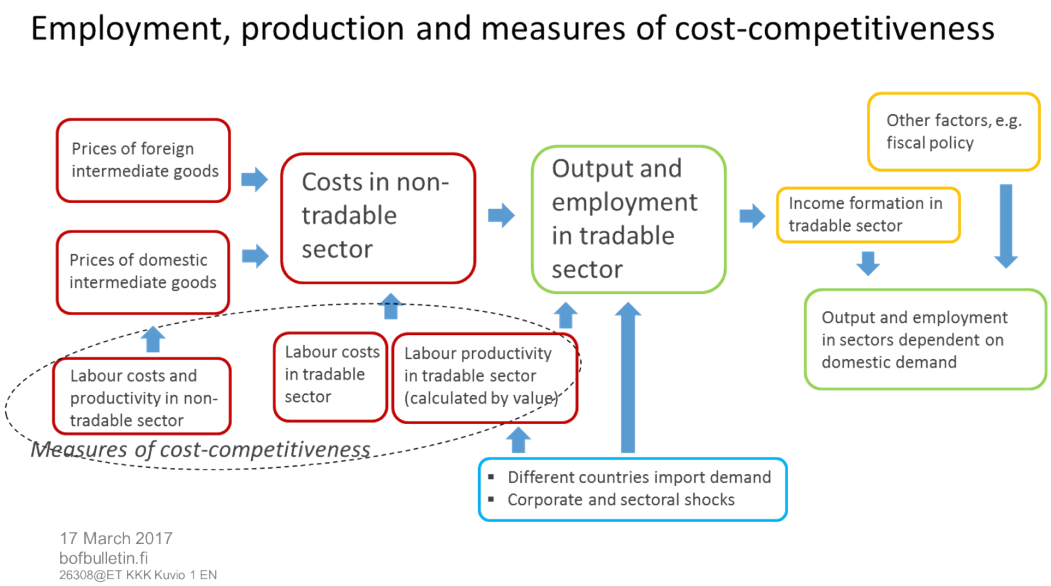
Measures of external balance

When looking at measures of cost-competitiveness, it is useful to also look at measures of a country's external balance and the conditions for production in the tradable sector. Here cost-competitiveness plays a role, but so do a number of other factors, as indicated above.

Current account and balance of trade

Two useful measures of external balance are the current account and the balance of trade (see Chart 10). There is a close connection between the balance of trade and cost-competitiveness. The former is the difference between the value of exports and imports of goods and services. Improvements in cost-competitiveness increase potential exports and diminish potential imports.

Chart 11.



The current account is a measure of an economy's net financing needs, or the difference between income and expenditure for the whole economy. Changes in the current account are mainly caused by fluctuations in the trade balance. The current account also comprises factor income (e.g. cross-border dividend and interest payments) and cash transfers, which in the case of Finland are small and consist mainly of payments to the EU.

Although no straight-forward equilibrium state of the current account can be defined, the current account has a more direct link to macroeconomic balance than does trade balance. It can be postulated that the age structure of a population has an impact on what level of current account surplus can be considered sustainable. With an ageing population and weakening old age dependency ratio compared with other countries, the current account can be expected to be in surplus as the economy prepares for the future. Consequently, Finland could be said to have had reason to consider a slight surplus in its current account as balanced over recent years.[19]

Export market share

Export market shares are a rather good indication of the conditions for production in the tradable sector of an economy (see Chart 10).[20] Market share describes growth in the volume of Finnish exports relative to growth in the volume of imports in Finland's target markets. Import volume is

calculated as a weighted average, where each target market's weight corresponds to its share in Finnish exports.

The conditions for production in the tradable sector in Finland can be viewed in relation to long-term developments in export market share. Nevertheless, there is no reason to expect that export market share will remain flat over the long term. Its long-term developments are affected by trends in economic growth and global trade.

The long-term trend of Finnish export market share may be considered to have diminished gradually over recent decades, as Finnish population development and labour productivity have lagged behind Asian and Central and Eastern European countries, in particular. A similar impact is caused by the strong growth of trade flows between these countries, in which Finland has not been involved.

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Notes

1. See EMU Expert Group (1997). ↑
2. See IMF (2015, 113–115) and Desai et al. (2007). ↑
3. See Turner and Van't dack (1993). ↑
4. See Kajanoja (2012). ↑
5. See OECD (2105, 187). ↑
6. See Kohli (2004) and Reinsdorf (2010). ↑
7. This article uses data from the European Commission's AMECO database for exchange rate adjusted gross domestic product (real GDP). Exchange rate adjusted GDP = total employee compensation / real gross domestic product. For an estimate of the same indicator taking self-employed persons into account, we would need to multiply the right side of the equation by the number of people in work (both employed and self-employed) and divide the result by the number of employees. The series underlying Chart 7 do not account for self-employed persons. For the indicator in question this is only relevant if the share of self-employed in all employed persons changes in Finland vis-à-vis comparator countries. ↑
8. See e.g. Australian Bureau of Statistics (2005). ↑
9. See Kivistö (2013). ↑
10. Nominal unit labour costs = compensation per employee / real gross value added. For an estimate of the same indicator taking self-employed persons into account, one would need to multiply the right side of the equation by the number of employed and divide the result by the number of employees. The series underlying Chart 8 do not account for self- ↑

employed persons. For the indicator in question this is only relevant if the share of self-employed in all employed persons changes in Finland vis-à-vis comparator countries.

11. Agriculture and forestry as well as real estate services are excluded due to low unit labour costs. ↑
12. See Hirsch and Higgins (1970), Artus and Rhomberg (1973). ↑
13. See Samuelson (1994). ↑
14. Country weights are taken from the BIS website at http://www.bis.org/statistics/eer.htm (visited on 6 March 2017). ↑
15. Some calculations on levels of cost competitiveness that Finland could usefully aspire to have been presented in Kajanoja (2015, 2016). ↑
16. See Kajanoja (2015, Chart 3). ↑
17. See Kajanoja (2016, Chart 4). ↑
18. See Kajanoja (2015, 9–10). ↑
19. This article references an export performance indicator published by the OECD (EO Sources – Notes to statistical annex tables 38-54: External trade and payments. http://www.oecd.org/eco/outlook/eosources-notestostatisticalannextables38-54externaltradeandpayments.htm#t_44]). ↑

Keywords

competitiveness, cost competitiveness, Finland