



Featured Topics

Information Technology and the Structural Change in the Paper Market

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For as long as printing papers (i.e. newsprint, magazine paper, office papers) have been manufactured and used for communication purposes, their consumption has grown. Moreover, the initial concerns about printing papers being marginalized by information technology appear to have been unfounded. However, recent research seems to indicate that the situation is now changing (Hetemäki 2005, Hetemäki and Obersteiner 2001, Kurikka 2005). According to these studies, the mutually supportive development of information and communication technology (ICT) and printing papers is taking on a different shape. Figures show that paper consumption is either on the wane or on the rise, depending on the end use of the paper and the geographical location of the market examined. So what is actually happening?

Newsprint Consumption Declining in OECD Countries

The statistics in many OECD countries indicate that printed newspapers are read by an ever decreasing section of the population. Young people, in particular, are not reading them, and, contrary to earlier practice, are not reading them when they get older either. This is a key factor behind the reduction in newsprint consumption in, for instance, the United States, Canada, the Nordic countries and the Netherlands (Figure 1). There are other factors, of course, such as the reduced

unit weight of newsprint and the changeover from broadsheets to the smaller tabloid sizes.

In Japan, the world's second biggest newsprint consumer after the United States, newsprint consumption has also failed to increase since the early 1990s. Japan's newsprint consumption has in fact stabilised at nearly 4 mill. tonnes p.a. This is chiefly the result of the country's prolonged economic recession and the development of ICT, though the extent to which each of these has affected the situation is difficult to assess. Newspaper circulation, for example, has been falling at about 2% p.a. in the period 1998–2003, but at the same time the economy has been growing at an average of only 0.4% p.a. (real GDP growth).

The relationship between economic growth, population growth and newsprint consumption in these OECD countries has changed, and this can be seen as a historic structural shift. Since the early days of newsprint production, demand for it has grown continually, as economies and populations have expanded. This does not necessarily hold true any longer, at least in the countries mentioned. The changes that are taking place also suggest that the situation should be analysed in regard to both *the short and the long term*. Research shows that growth in the economy can have two quite opposite effects, depending on the time horizon examined (Hetemäki 2005, Hetemäki and Mikkola 2005).

Hetemäki and Mikkola (2005) demonstrate that in models which explain US newsprint consumption

on the basis of GDP growth, among other factors, the effects of GDP growth on newsprint consumption are positive in the short term but negative in the long term. However, a precise division between short term and long term is difficult, as this is related to time series econometrics and the specific models used. Nevertheless, the short term can intuitively be perceived as reflecting cyclical fluctuations, such as the transition from downturn to upswing. The long term, on the other hand, depicts a period during which structural changes can occur in the economy and in newsprint consumption, i.e. a period that is considerably longer than cyclical fluctuations.

Research shows that cyclical changes in the economy have an effect on newsprint consumption, which confirms conventional wisdom: when the economy improves, advertising in newspapers and other media will increase and so newsprint consumption goes up, and vice versa in a cyclical downturn. This being the case, we should still see periods in the OECD countries when newsprint consumption will grow again and prices rise. The situation looks different, however, if short-term cyclical fluctuations are removed from the statistics on newsprint consumption and the economy, and attention given instead to long-term trends. In the longer term, economic growth will encourage the tran-

sition to an 'information society', where computers, the Internet, broadband connections, etc. are accessible by an increasing number of people. In other words, the wealthier the country, the more likely that people will be able to acquire and use electronic media. This, in turn, will allow people to replace printed newspapers ever more easily with digital information technology, such as on-line editions of newspapers. In some cases, reading newspapers, whether printed or on-line, may be given up completely and the time spent instead on other opportunities offered by new media and digital products and services (e.g. video games, Internet surfing, various multimedia devices). With only 24 hours in a day, the different communications channels and forms of entertainment are all competing for the consumer's time in a zero-sum game.

Office Paper Follows Newsprint Trend but with a Time Lag

Besides newsprint, the market for certain office papers (e.g. business forms) has also experienced a structural change in recent years as a result of ICT development. Commercial banks, for instance, have switched from printed bank statements and forms to on-line versions. This has often been motivated by both economic

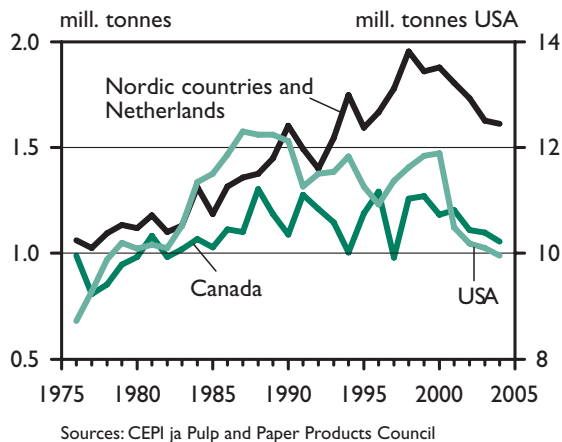


Figure 1. Newsprint consumption in selected OECD countries, 1976–2004

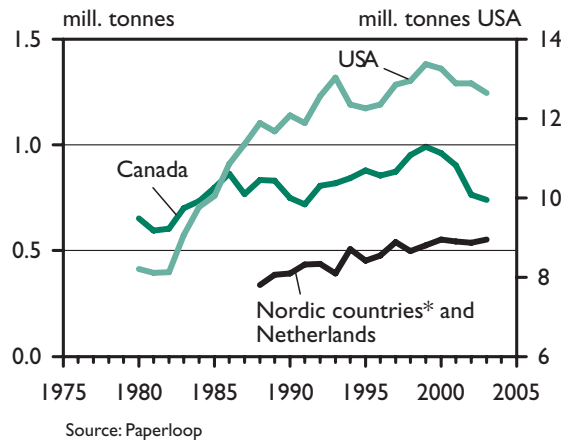


Figure 2. Office paper (uncoated woodfree) consumption in selected OECD countries, 1980–2003

and environmental considerations. In spring 2005, for example, the Bank of America announced its new policy on paper use, declaring that it aims to minimise the use of paper through measures such as increasing the amount of electronic communication (Bank of America 2005). The introduction of this policy follows pressure from environmental groups and is also based on the Bank's own economic considerations. Similar guidelines have been issued by many other companies in the United States and Europe (e.g. Citygroup and HVB Group). The banking and insurance sector is one of the biggest consumers of business forms, and so the policies adopted on paper use will inevitably affect the total consumption of office papers.

In many countries, the public sector has also adopted the goal of reducing paper consumption. Typical examples are the aims expressed by central and local government administrations and universities about changing over to electronic documents. In Finland, one of the most recent examples is Tampere City Council's aim of switching to the use of electronic documents in the business of the council (City of Tampere Environmental Strategy 2005–2012).

Published statistics reveal that in many OECD countries (Figure 2 and Hetemäki 2005, Kurikka 2005) the growth in consumption of office papers (e.g. A4 and business forms) has either slowed significantly, come to a halt or started to decline. The developments described earlier are most likely a key factor in this. Facilitating and reinforcing this trend is the development of digital information technology. In Japan, the figures show that the consumption of office paper is following this pattern, as consumption has remained at approximately 3.5 mill. tonnes p.a. in the past ten years. As with newsprint, it is difficult to estimate the extent to which the weakening of growth in office paper consumption is caused by the economic recession and by the development of ICT.

It is interesting to observe that the structural change seen in newsprint and office papers has not yet occurred in magazine paper. Consumption of magazine paper in the OECD countries, including the United States, has continued to grow, albeit at a slightly slower pace than before. This confirms the difficulty in making generalisations in assessing the effects of ICT on paper products, as the impact of ICT differs according to the

paper product in question. For example, in the OECD countries the outlook is good for paper grades suitable for printing photographs, and information technology is the very reason for this.

Assessments of Paper Consumption in OECD Countries Need Updating

Assessments of the outlook for the consumption of paper products are made at regular intervals by consultancy firms serving the paper industry and by the UN's Food and Agricultural Organisation (FAO) and various research institutions. Studies of these assessments (see Sources list) indicate that in most of them either the structural change described above has not been taken into consideration at all or the impact of ICT has not been adequately accounted for. Assessments of paper consumption in the OECD countries in the longer term made on this basis do not, therefore, appear realistic. In the case of some assessments, this can already be seen in recent developments. New assessments that take into account the impact of ICT on paper consumption are essential, though this will be a challenge to researchers because it requires the development of completely new forecasting models (see Hetemäki 2005).

ICT development affects not only the consumption of paper products but their *prices* as well. The increasing application of ICT in the paper industry has also led to an increase in productivity, and this trend will continue. At the same time, the competition between printed and electronic communications is increasing, and price trends on the world paper market are also converging as ICT development continues. All these trends will intensify competition on the paper market and create pressure for lower paper prices.

New Geographical Focus Emerging in Paper Production and Consumption

Overall, the consumption of paper products will continue to increase in the world at large, regardless of developments in ICT. Although the traditional links between paper consumption, economic growth and population growth seem now to have been broken in a number of Western countries, this is not the case yet in, for example, China or Russia. The effects of ICT

on paper products are, in principle, the same everywhere, but other factors guiding paper consumption are more prominent in these regions. In India, China and Russia, for example, consumption of newsprint and office paper per capita is only a fraction of what it is in the previously mentioned OECD countries. With greater economic prosperity, the consumption of paper will probably grow in these countries at least in the coming decade.

The development of ICT will reinforce the structural change already under way on the world paper market. Paper product consumption in the OECD countries will either increase slowly or not at all, in contrast to many Asian countries, Russia and the countries of Eastern Europe, where it will increase rapidly; these countries also have significantly lower paper industry production costs than the OECD countries. Production trends will be influenced not only by labour costs, but also by the availability and price of raw materials. All this will inevitably mean that the focus of paper consumption and production will increasingly move away from the OECD countries. This is likely to occur gradually and over the longer term.

In general, many of the structural changes brought by information technology will occur at a slow but steady rate over many years. Such changes are often easier to manage and prepare for. However, a potential problem is that slowly occurring trends do not always provoke a response, and preparing for such changes may be delayed because of more pressing issues, with the result that the response may occur too late. Hence, it is particularly important that traditional paper producing countries such as Finland should prepare for

the paper market changes referred to here, as they are already looming on the horizon. One way of doing this is to increase the amount of research, information and debate on the effects of information technology and the new opportunities that it brings. Although the latter has not been presented here, it is clear that making good use of these opportunities will probably be a key factor in responding to the structural changes on the world paper market.

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