

Mega Merger Mania... New M&A on the way?

Analysts in equity markets have been predicting a further round of merger and acquisition activity across many markets in the next twelve months.

At first Adam Fletcher, chairman of the *International Distributors of Electronics Association (IDEA)* and the UK's Electronic Components Supply Network thought their optimism might be misplaced, given the economic uncertainties of the COVID-19 Pandemic but at least one recent event has proved them to be correct.

In July '20 Analog Devices Inc announced that it planned to acquire Maxim Integrated Products Inc in an all-share transaction valued at \$21B, subject of course to regulatory approval.

In this article Fletcher, provides an overview of the proposed "mega-merge" and shares his thoughts on what it could mean for our industry.

ADAM FLETCHER, ECSN



OCTOBER 2020



1. Mega Merger Mania...
New M&A on the way?
3. An overlook on the economic situation: into major decline
7. The European economy situation
10. Covid-19 leaves deep impact in German components Distribution
12. New RF coax connectors evolve as emerging technologies demand greater performance

EVERYTHING IS ANALOGUE...

It's a subject much debated but it's fairly likely that the observation "everything is analogue" can be attributed to **Dr Karl Popper**, one of the 20th century's most influential philosophers of science. It's still true: analogue electronic components remain critical in Power Management, RF, Communications and Interface circuitry and are used in almost all electronics applications. Semiconductor technologists expend much intellectual time in their efforts to improve analogue signals, typically converting them to a digital representation capable of being processed by a microprocessor or microcontroller, before converting the signals back to analogue once again. It is often described as a "dark art" because a very detailed understanding of the physical properties of the combinations of materials used and how they react as they are processed and then used within the target application is essential in order to achieve the required performance.

"ANALOGUE ELECTRONIC COMPONENTS REMAIN CRITICAL IN ALMOST ALL APPLICATIONS"

As analogue manufacturing processes use older more established technologies with much larger feature sizes than the latest digital semiconductors the design costs for an Analogue device are much lower. In addition, the product life cycle for analogue products is often twice that of digital semiconductors, which is typically under five years, a new analogue device is often a derivative of an existing well established product and typically integrates peripheral passive

ASSOCIATIONS



AREI - SOUTH AFRICA
Association of Representatives
for Electronics Industry

ASPEC - RUSSIA
Association of Suppliers of Electronic
Components

ASSODEL - ITALY
Associazione Nazionale Fornitori Elettronica

CEDA - CHINA
China Electronics Distributor Alliance

ECAANZ - AUSTRALIA
Electronic Components Association
Australia and New Zealand

ECIA - UNITED STATES
Electronic Components Industry Association

ECSN - UNITED KINGDOM
Electronic Components Supply Network

ELCINA - INDIA
Electronic Industries Association of India

FBDI - GERMANY
Fachverband der Bauelemente Distribution

FEDELEC - TUNISIA
Tunisian Federation of Electric
and Electronic Industries

SE - SWEDEN
Svensk Elektronik Trade Associations

SPDEI - FRANCE
Syndicat Professionnel de la Distribution
en Electronique Industrielle

components or improves specific key electrical parameters required by the application. The TAM (*total available market*) for Analogue semiconductors is much smaller than the Digital semiconductor TAM. According to market analyst **IC Insights**, the Top 10 Analogue semiconductor manufacturers accounted for close to 62% of the TAM in 2019, reporting combined sales of **\$34B** out of a total of \$55B. For comparison, the Top 10 Digital semiconductor suppliers (only Texas Instruments is ranked in the Top 10 for both Analogue and Digital) had an estimated combined sales revenue of **\$261B** in 2019, a figure that suggests that Analogue semiconductors account for approximately 20% of the total semiconductor market.

“The top 10 analogue semiconductor manufacturers account for a value of 34 billion dollars”

ANALOGUE SEMICONDUCTOR ACQUISITIONS...

Investors have always considered Analogue semiconductor companies to be **very stable organisations**, often founded and initially led by physicists or mathematicians who were personally responsible for many of the designs and patents held by the organisations. Whilst many Analogue companies have made acquisitions in the past, these were usually low-cost affairs carried out to acquire a specific technology or access to a market sector rather than to boost market share or economies of scale. In 1990 Analog Devices acquired PMI and in 2000 **Texas Instruments (TI)** acquired Burr Brown for \$7.6B.

A major change came in 2011 when TI announced it had acquired **National Semiconductor** - at the time one of the market leaders in Analogue - for \$6.5B, propelling TI up to the top of the Analogue supplier rankings. Five years later **Analog Devices** surprised the market by acquiring **Linear Technology (LTC)** for \$14.8B followed by its announcement in July this year of its intention to buy **Maxim Integrated Products** for \$21B. If this deal goes through Analog Devices will remain the second largest analogue semiconductor supplier but will be buying at the heels of TI, which currently has a 19% share of the TAM.

CUSTOMER ENGAGEMENT...

The M&A processes inevitably throw up an overlap in a wide range of job functions and particularly with electronic components companies, also within the Channel Partner (authorised distributor) network.

There is a mutual dependence between the direct and indirect customers of a semiconductor manufacturer. Sales to direct customers keep manufacturing volumes high and enable economies of scale to be realised. Approximately 60% of all semiconductor products by sales revenue value are sold directly by the manufacturer to a small number of very large customers and sometimes even to a single customer, but they are generally able to realise much better margins on the indirect sales made by their Channel Partners. These third-party companies jointly account for >40% of the semiconductor TAM and often number their customers in the

“The merge of AD and Maxim will create some disruption in the supply network...”

1,000s. That said, the spread of Analogue semiconductor customers is very wide and highly diffused, making it a highly challenging market to address, but manufacturers embrace the security that a wide diversity of indirect customers and applications brings to their business and recognise that sales made to these customers mitigate the potential risks posed by any over-reliance on a small number of direct customers.

By any measure effective communication with customers is an essential part of the M&A process. No semiconductor company wants to alienate its customer base and will make every effort to provide it with accurate and timely information. However, recent experience shows that the provision of this information often lags a long way behind the implementation of other activities, probably reflecting just how critical all the other Executive Management actions are to the merged organisation.

Fortunately, the trade media, email and social media platforms provide fast and wide dissemination of information, be it positive or negative, which of course depends on the recipients' perspective. Such communication will often raise a multitude of questions, the answers to which may be commercially sensitive or yet unknown. In these circumstances competitors are often perceived as being the more effective communicators as they seek to gain a competitive advantage during the period of reorganisation.

CONCLUDING THOUGHTS...

In the current market Analog Devices is being very brave in making a large and what appears to be a very expensive acquisition, but the financial analysts must be able to see a positive outcome for long-term earnings. As AD and Maxim combine there will inevitably be some disruption within the supply network which hopefully can be minimised by effective communication. I urge all organisations to engage effectively with their supply network partners, in the current economic climate it's a simple and effective way to help to boost your organisation's performance.



An overlook on the economic situation Into major decline

AUBREY DUNFORD, IDEA



The effects of the COVID 19 pandemic are now clearly to be seen in the sales of Electronic Components through Distribution in Europe. In the first quarter of 2020 sales were affected as the virus disrupted the supply from China before the great European shut-down hit sales at the end of March. In the second quarter the full effect of three months of disruption not only in Europe but throughout the world is evident. As European countries attempt to get their economies moving again, the summer period and concerns of a second wave continue to reduce any expectation of a drastically better picture in the third quarter.

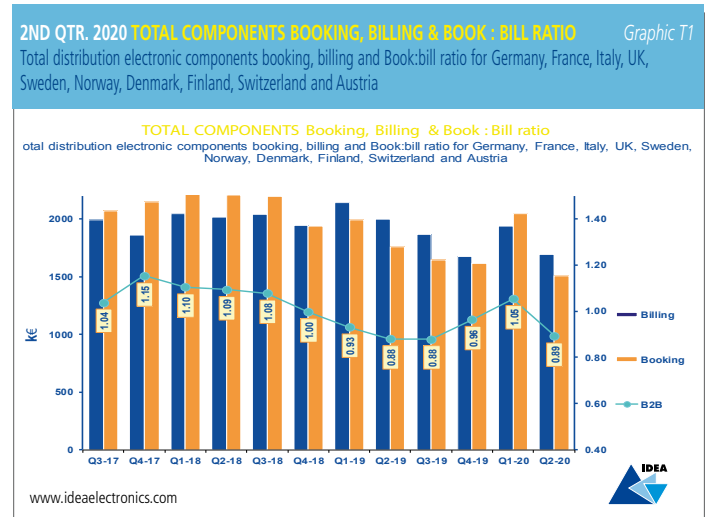
THE ECONOMY SLOWDOWN

Although the global economy was continuing to slow as we entered the first months of 2020 the effect of COVID 19 has led us into unprecedented areas and any attempt to look at historical trends are pointless. The European Electronic Components Distribution Market declined as shown by the Q2 2020 European Electronic Components Statistics by IDEA.

Billings measured across Europe in Q2 2020 were 15.4% lower than in the same quarter of 2019. In all countries the seasonal pattern is for the first quarter of the year to be higher than the second but in 2020 the second quarter billings have been 12.9% lower than in the first quarter. Although the real effect of the European shutdown came only in the last weeks of the first quarter, there was already disruption in the supply chain as the effects of the lockdown in China were being felt. However, the second quarter reflects a complete three months of global economic downturn. Bookings were 26.2% lower in the second quarter compared to the first quarter of 2019 and 14.1% lower than in the second quarter of 2019.

“We have to expect a dramatic downturn in the market also in Q3 2020,,

Another sign of the downturn can be seen in *Graphic T1*. According to IDEA, the book:bill ratio having been falling for 7 successive quarters improved in the last quarter of 2019 and in the first quarter of 2020 has rose past unity to 1.05. However, in the second quarter the ratio has dropped again to 0.89. With the continued slowing of the global economy the supply/demand had come back into balance and companies had adjusted their stock levels to lower levels and were starting to place orders more in line with demand and hence the improvement in the book:bill ratio.



However, as expected the COVID 19 situation killed that hopeful sign in the second quarter of 2020, and we have to expect that a dramatic downturn in the market will continue into the third quarter of 2020. As indicated in the economic outlook below the effects of the virus are likely to be severe and it is difficult to predict any clear view on the market for the remainder of 2020 but it does now seem that there will be no real return to growth until 2021.

COVID-19 CRISIS: MORE SEVERE ECONOMIC FALLOUT THAN ANTICIPATED

According to the **International Monetary Fund's World Economic Outlook (WEO)** published in June 2020 - "Global growth is projected at **-4.9%** in 2020, 1.9 percentage points below the April 2020 forecast. The COVID-19 pandemic has had a more negative impact on activity in the first half of 2020 than anticipated, and the recovery is projected to be more gradual than previously forecast. In 2021 global growth is projected at 5.4 percent. Overall, this would leave 2021 GDP some 6½ percentage points lower than in the pre-COVID-19 projections of January 2020".

As with the April 2020 WEO projections, there is a higher than usual degree of uncertainty around this forecast. The baseline projection rests on key assumptions about the fallout from the pandemic. In economies with declining infection rates, the slower recovery path in the updated forecast reflects persistent social distancing into the second half of 2020; greater scarring (damage to supply potential) from the larger than anticipated hit to activity during the lockdown in the first and second quarters of 2020; and a hit to productivity as surviving businesses ramp up necessary workplace safety and hygiene practices. For economies struggling to control infection rates, a lengthier lockdown will inflict an additional toll on activity.

“Global growth is projected at -4,9% in 2020,,

Moreover, the forecast assumes that financial conditions - which have eased following the release of the April 2020 WEO - will remain broadly at current levels. Alternative outcomes to those in the baseline are clearly possible, and not just because of how the pandemic is evolving. The extent of the recent rebound in financial market sentiment appears disconnected from shifts in underlying economic prospects, raising the possibility that financial conditions may tighten more than assumed. All countries - including those that have seemingly passed peaks in infections - should ensure that their health care systems are adequately resourced. The international community must vastly step up its support of national initiatives, including through financial assistance to countries with limited health care capacity and channelling of funding for vaccine production as trials advance, so that adequate, affordable doses are quickly available to all countries.

Where lockdowns are required, economic policy should continue to cushion household income losses with sizable, well-targeted measures as well as provide support to firms suffering the consequences of mandated restrictions on activity. Where economies are reopening, targeted support should be gradually unwound as the recovery gets underway, and policies should

provide stimulus to lift demand and ease and incentivize the reallocation of resources away from sectors likely to emerge persistently smaller after the pandemic.

Economic data available at the time of the April 2020 WEO forecast indicated an unprecedented decline in global activity due to the COVID-19 pandemic. Data releases since then suggest even deeper downturns than previously projected for several economies. The pandemic has worsened in many countries and has levelled off in others. Following the release of the April 2020 WEO, the pandemic rapidly intensified in a number of emerging market and developing economies, necessitating stringent lockdowns and resulting in even larger disruptions to activity than forecast. In others, recorded infections and mortality have instead been more modest on a per capita basis, although limited testing implies considerable uncertainty about the path of the pandemic. In many advanced economies, the pace of new infections and hospital intensive care occupancy rates have declined thanks to weeks of lockdowns and voluntary distancing.

GDP: A GLOBAL OVERLOOK

First-quarter GDP was generally worse than expected (the few exceptions include, for example, Chile, China, India, Malaysia, and Thailand, among emerging markets, and Australia, Germany, and Japan, among advanced economies).

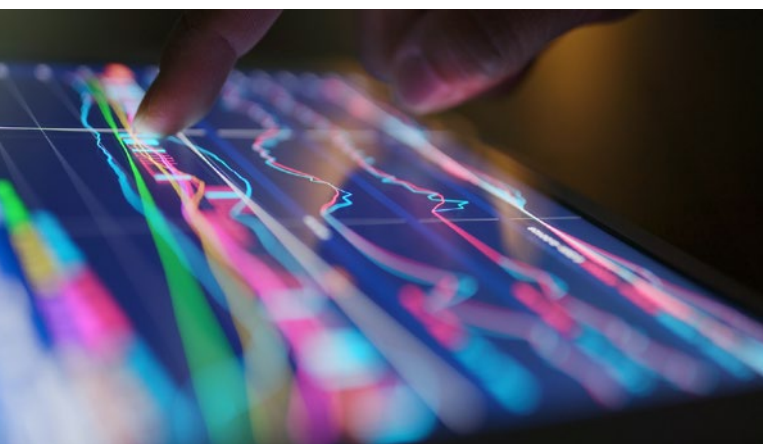
High-frequency indicators point to a more severe contraction in the second quarter, except in China, where most of the country had reopened by early April.

“Among the consequences, a weak consumer demand, a reduction of mobility and the loss of thousands of jobs,,

Globally, lockdowns were at their most intense and widespread from about mid-March through mid-May. As economies have gradually reopened, mobility has picked up in some areas but generally remains low compared to pre-virus levels, suggesting people are voluntarily reducing exposure to one another. Mobility data from cell-phone tracking, for example, indicate that activity in retail, recreation, transit stations, and workplaces remains depressed in most countries, although it appears to be returning to baseline in certain areas.

The synchronized nature of the downturn has amplified domestic disruptions around the globe. Trade contracted by close to -3.5 percent (year over year) in the first quarter, reflecting weak demand, the collapse in cross-border tourism, and supply dislocations related to shutdowns (exacerbated in some cases by trade restrictions).

Average inflation in advanced economies had dropped about 1.3 percentage points since the end of 2019, to 0.4 percent (year over year) as of April 2020, while in emerging market economies it had fallen 1.2 percentage points, to 4.2 percent. Downward price



pressure from the decline in aggregate demand, together with the effects of lower fuel prices, seems to have more than offset any upward cost-push pressure from supply interruptions so far.”

China reported that the country’s GDP grew by 3.2% in the second quarter of this year, compared to a year ago — beating analysts’ expectations and rebounding from the first quarter’s contraction. It comes as lockdowns to contain the coronavirus outbreak in China eased, and as Beijing rolled out stimulus measures to prop up its economy. China’s first quarter GDP contracted by 6.8% in 2020 from a year ago as the world’s second largest economy took a huge hit from the coronavirus outbreak.

“Generally speaking, the national economy overcame the adverse impact of the epidemic in the first half gradually and demonstrated a momentum of restorative growth and gradual recovery, further manifesting its development resilience and vitality,” said **China’s National Bureau of Statistics** in a press release. The Chinese government has introduced measures to boost the economy. Recent data out of China show some signs of recovery. Trade numbers in June showed that China’s dollar-denominated exports and imports rose. Manufacturing activity in June also expanded compared to May, two different sets of surveys showed. Chinese exports have been getting “**massive market share**” while the rest of the world was locked down, said **Bo Zhuang**, chief China economist at TS Lombard before the data release. China started easing lockdown measures earlier than other countries.

Japan’s economy shrank 7.8 percent in the second quarter of the year, its worst performance on record, as the coronavirus pandemic ground economic activity to a near halt in April and May. The nosedive in output in the three months - an annualized drop of 27.8 percent - was the third straight quarter of contraction for Japan, the world’s third-largest economy after the United States and China.

“The pandemic’s impact on the economy is similar to those of the 2008 financial crisis,,

It followed a 0.6 percent decline in the first quarter of 2020, or an annualized decrease of 2.2 percent. It is the largest decrease since 1955, when the Japanese government began to use gross domestic product as a measure of its economy. Already weakened by a tax increase, slowing demand from China and a series of natural disasters last fall, Japan’s economy became the first among major nations to officially fall into recession when the pandemic hit, causing exports to plunge and effectively obliterating the country’s tourism sector.

“The pandemic’s total impact on the economy up to this point is almost the same as the 2008 financial crisis,” said **Michinori Naruse**, an economist at the Japan Research Institute. With the financial crisis, “things got worse slowly,” he said. “This time, they got bad all at once.”



The **U.S. economy** shrank by a stunning 9.5 percent from April through June, a historic contraction and a stinging reminder of how much was lost in such a short period. The drop in gross domestic product was the fastest the quarterly rate has fallen in modern record-keeping. As the ground beneath the economy buckled amid the coronavirus pandemic, tens of millions of jobs were erased, businesses were gutted and the future of the economy became further intertwined with an uncontrolled public health crisis.

“Japan’s economy shrank 7.8% while the US shrank 9.5% from April to June,,

With that pain still fresh for millions of Americans, economists say the second quarter stands as an urgent warning for what is at stake if the vestiges of a recovery from earlier this summer vanish. While Congress clashes over another stimulus bill and the virus forces more states to shut down bars and restaurants again, there is mounting fear that the economy could be held back even more, making a true recovery much more fraught. GDP shrank at an annual rate of 32.9 percent, according to the **Bureau of Economic Analysis**.

Although it usually stresses the annualized rate, that figure is less useful this quarter because the economy is unlikely to experience another collapse like it did in the second quarter. Federal Reserve Chair Jerome H. Powell warned that the most recent surge in infections has begun to weigh on the economy, while reemphasizing that a recovery cannot be sustained unless the virus is under control.



YOUR IDEA

PRODUCT LIFECYCLE

AVNET CAPABILITIES

Research & Concept

Communities

Design & Prototype

Design Services

New Product Introduction

Manufacturing Support

Production

Supply Chain

Service

Logistics

AVNET SOLUTIONS

Internet of Things

Artificial Intelligence

Components & Devices

Hardware & Software

Integration

Use it all – or just what you need.

Plug any of these into any project, any time.

Your Ideas. Our Ecosystem.

Bring us your theories, your visions, your bold new ideas. We can make them a reality. No matter where you are in your product journey, we've got the solutions and know-how you need to get to market...fast.

EXPLORE AVNET'S ECOSYSTEM AND REACH FURTHER!

avnet.com

The European economy situation

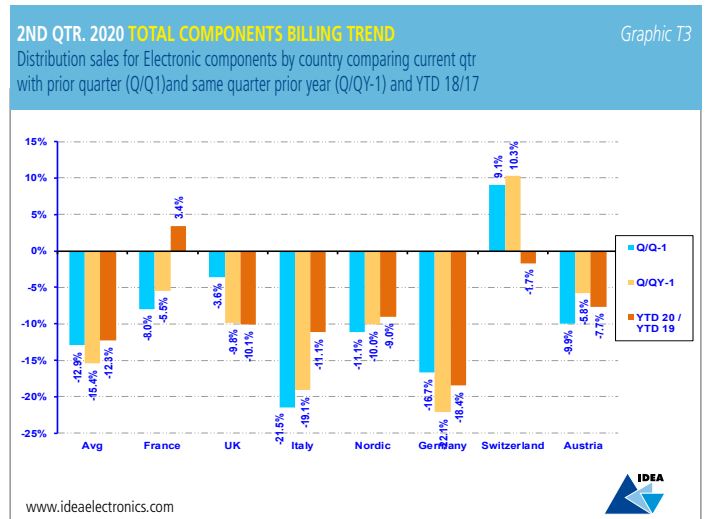
The Euro area economy collapsed at a record-breaking pace in the second quarter as severe shutdowns closed businesses and hammered the labour market. In Q2, GDP dived a seasonally adjusted 12.1% from the previous quarter, following Q1's 3.6% drop, according to a preliminary estimate released by Eurostat on 31 July. The economy thus contracted at the sharpest pace since the series began in 1995 and broadly matched expectations of a 12.0% fall. Compared with the same quarter of the previous year, seasonally-adjusted GDP plunged 15.0% in Q2, following Q1's 3.1% decline, also marking the worst reading on record. The historic contraction came on the back of frozen business and household activity as the full effect of lockdowns adopted by governments to contain the pandemic was felt.

In terms of individual countries, **Spain's** economy collapsed 18.5% over the previous quarter; **France's** GDP tumbled 13.8%; Italy's already-ailing economy slumped 12.4%, although beat market expectations of a 15.0% crash; while **Germany's** GDP contracted 10.1%. Taking the year as a whole, economic activity is set to be hammered as the pandemic disrupts supply chains, hits tourist flows and suppresses both domestic and external demand. In addition, the outbreak could exacerbate the fragilities within those banking systems which are burdened by a high stock of bad loans and could also strain debt sustainability in countries with heavy public debt-to-GDP ratios. That said, the recently approved EU recovery fund should reduce the risks of financial turmoil.

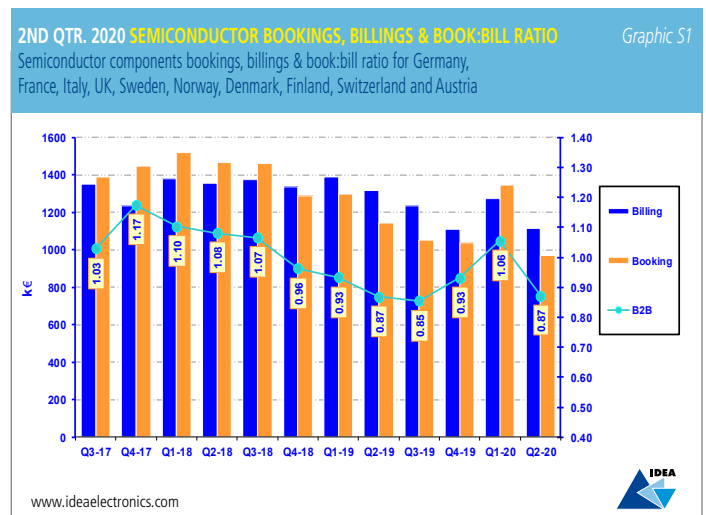
The **U.K. economy** contracted by 20.4% in the second quarter of 2020, compared to the previous three months, as coronavirus-induced lockdowns hammered activity, according to preliminary figures released Wednesday. The second-quarter plunge is the worst on record and follows a 2.2% contraction in the first quarter. Analysts had expected a fall of 20.5%, according to a Reuters poll. Two consecutive periods of contraction mean the British economy is now in a technical recession. Services, construction and production all saw record quarterly falls, particularly in the sectors most exposed to government restrictions, according to the Office for National Statistics (ONS). "The economy began to bounce back in June with shops reopening, factories beginning to ramp up production and housebuilding continuing to recover," ONS Deputy National Statistical for Economic Statistics **Jonathan Athow** said. Britain's quarterly contraction is by far the deepest among comparable advanced economies (G7). French GDP contracted by 13.8%, Italy 12.4%, Germany 10.1%, Canada 12%, the U.S. 9.5% and Japan 7.8%.

IDEA: THE ELECTRONIC COMPONENTS MARKET IN EUROPE

Looking at the data from the Q2 2020 European Electronic Components Statistics we can see: **Market Decline continues**
As can be seen in *Graphic T3* there has been decline in billings (sales) Q2 2020 over Q2 2019 in all countries except Switzerland, so for Europe as a whole, the decline was 15.4%. Europe's largest market,



“In Europe, the GDP contraction was between 10 and 20%,,



Germany, declined by 22.1%. The figures shown in *Graphic T2* show that bookings in Q2 2020 were overall 14.1% lower than Q2 2019. As with the billings there was a decline in all countries except Switzerland.

QUARTERLY SALES BY PRODUCT FAMILY

As we do each quarter, we look at the booking and billing trends by product and regional market.

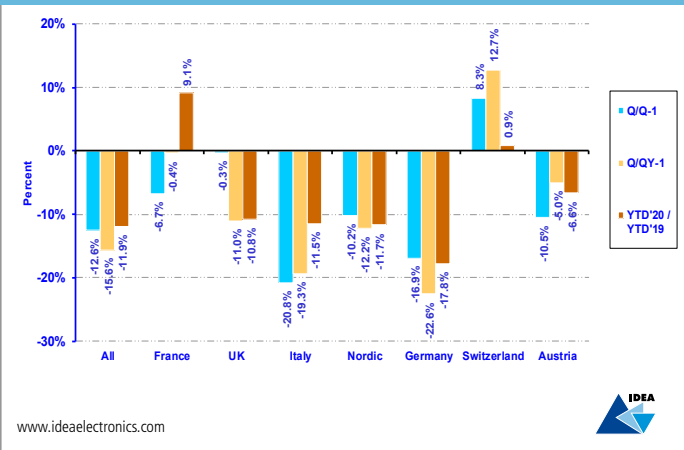
SEMICONDUCTORS

The **book:bill ratio** for semiconductors as shown in *Graphic S1* shows the same pattern as for the total components with 7 quarters with the ratio declining but then increasing in the fourth quarter

2ND QTR. 2020 SEMICONDUCTOR BILLING TREND

Graphic S3

Distribution sales for semiconductors by country compared with the prior quarter (Q/Q1) and the same quarter prior year (Q/QY-1) and YTD 18/17



of 2019, in the first quarter of 2020 passing back into positive at 1.06 before dropping down to 0.87 in the second quarter. This picture within the semiconductor market in Europe continues to be consistent with figures from other sources showing the slowdown in the global market but as the pandemic continues around the world hope of a quick upturn are fading.

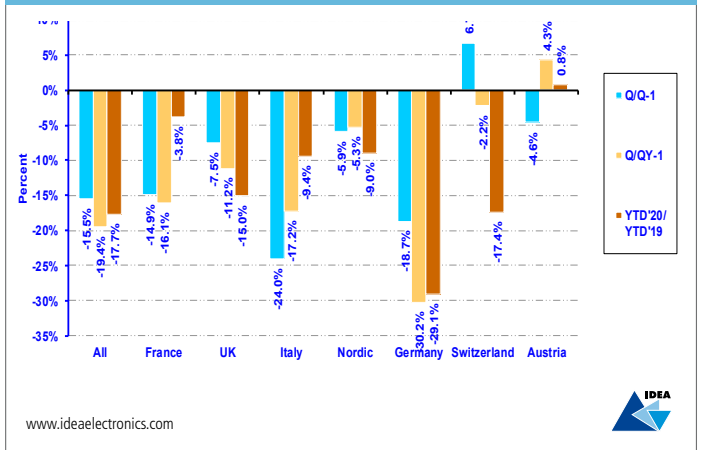
As can be seen in *Graphic S3* Billings in Q2 2020 were 12.6% lower than in Q1 2020 and 15.6% down compared with Q2 2019. As in the first quarter the steepest decline was in Germany at -22.6%. As with total components, all countries showed lower billings in Q2 2020 compared to Q1 2020 except Switzerland. As semiconductors are the largest category as usual the bookings pattern is the same as for total components.

“SEMICONDUCTOR BILLINGS WERE 15.6% DOWN COMPARED WITH Q2 2019,,

2ND QTR. 2020 PASSIVE COMPONENTS BILLINGS TREND

Graphic P3

Distribution sales for passive components by country comparing Q2 2017 with the prior quarter (Q/Q-1) and the same quarter prior year (Q/QY-1)



In the Passives Sector the book:bill ratio having been positive for nine consecutive quarters, dropped to 0.86 and 0.85 in the first three quarters of 2019 but then rebounded nearly to unity in the last quarter of 2019 and having improved slightly in Q1 2020 passing back past unity, dropped back to 0.83 in the second quarter.

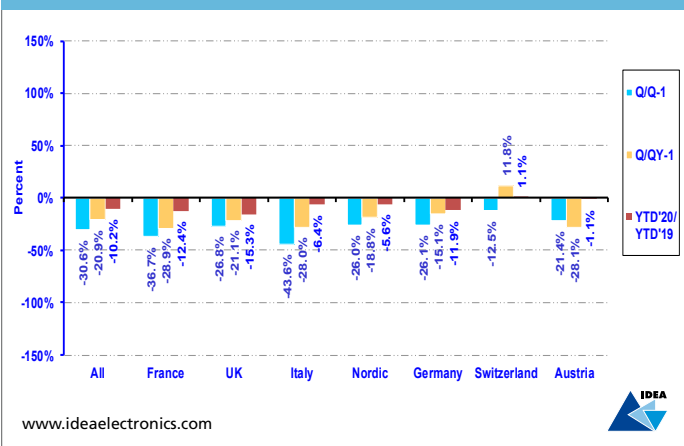
As can be seen from *Graphic P3* passives are showing the same general picture as semiconductors with sales in Q2 2020, 15.5% lower than in Q1 2020 and 19.4% lower compared to Q2 2019. Again, there is a consistent picture across the European countries, except Austria where there has been a small growth of 4.3% compared to Q2 2019. The largest decline was in Germany of 30.2%.

As *Graphic P2* shows in this quarter there has been a weaker performance in bookings hence the drop in the book:bill ratio. Bookings overall in Q2 2020 were 30.6% lower than in the first quarter of 2020 and 20.9% lower than the second quarter of 2019. This picture was fairly consistent across all countries with the exception of Switzerland where bookings were 11.8% higher than Q2 2019.

2ND QTR. 2020 PASSIVE COMPONENTS BOOKING TREND

Graphic P2

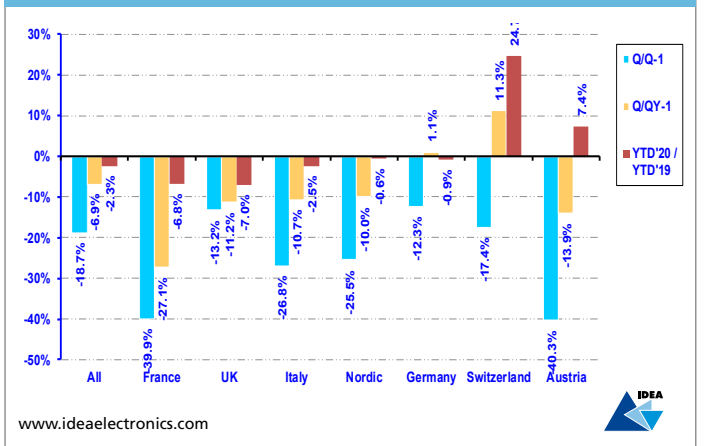
Distribution orders for passive components by country comparing Q2 2017 with the prior quarter (Q/Q-1) and the same quarter prior year (Q/QY-1)



2ND QTR. 2020 EMECH COMPONENTS BOOKING TREND

Graphic E2

Distribution orders for passive components by country comparing Q3 2019 with the prior quarter (Q/Q-1) and same qtr prior year (Q/QY-1)

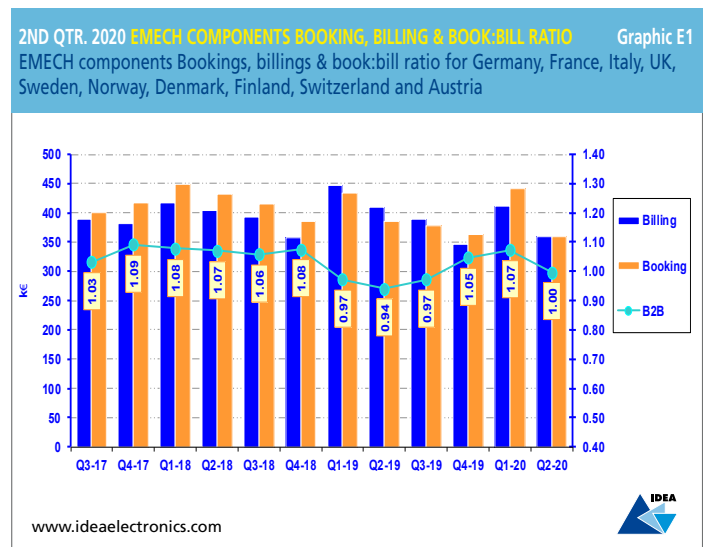
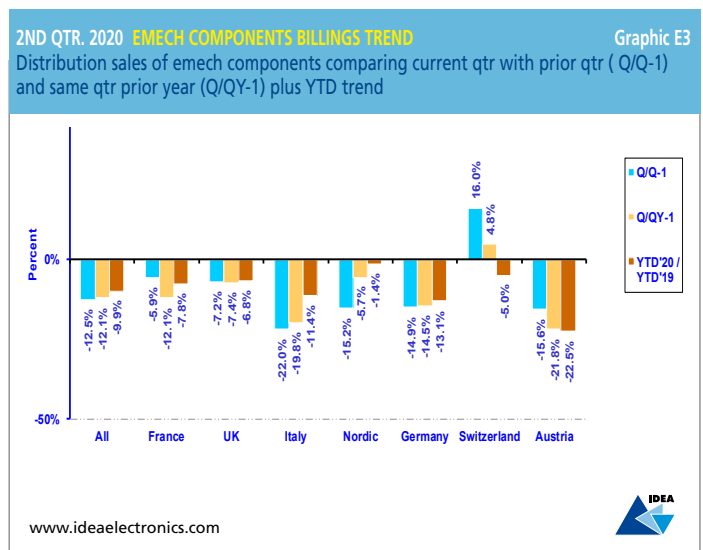


E-MECH AND OTHER COMPONENTS

As can be seen from the *Graphic E1* the trend for the book:bill ratio is slightly different from the other two product categories with the ratio being more stable.

Although there was a decline in the first quarter of 2019 the ratio was only just below unity at 0.97 and dropping to 0.94 for both the second and third quarters. It then went back past unity to 1.05 in the last quarter of 2019, rising slightly further to 1.07 in Q1 2020 before dropping back to unity in the past quarter. This confirms the much more stable nature of this sector compared to semiconductors.

Graphic E3 shows that overall, there was a fall of 12.5% in billings in the second quarter of 2020 compared to the first quarter of with all countries except Switzerland showing a decrease. (Switzerland had shown a decrease in the first quarter when other countries had all shown an increase – so this is likely to be a correction. Compared to the second quarter of 2019 there was a 12.1% decline in the market. Bookings decreased overall by 18.7% compared to Q1 2020 and decreased by 6.9% compared to Q2 2019.



News

The growing demand for semiconductors - especially for the IoT market and in general communications and IT infrastructure - is expected to lead to an 8% increase in spending worldwide in semiconductor manufacturing equipment in 2020 (to nearly \$60 billion) and 13% in 2021 (to about \$67 billion).

According to the **"Semi World Fab Forecast"** report which covers more than 1,300 factories and semiconductor production lines, the uptrend in semiconductor manufacturing equipment investment will come after a 9% drop in 2019 and after a difficult time in the first and third quarters 2020.



Of any semiconductor industry, memory equipment spending will see the biggest increase, rising \$3.7 billion (16%) year-over-year. Spending on 3D Nand memories will register the largest percentage increase this year: +39%.

Expenditure growth forecasts for the foundry, the second largest sector for equipment spending in 2020, are estimated at \$2.5 billion (+12% year-on-year). Equipment spending for microprocessors will have to decrease by \$1.2 billion (or 18%) in 2020 and increase by 9% to reach \$6 billion in 2021.

Spending on analog circuits is expected to increase 48% in 2020 and 6% in 2021, an expansion mainly driven by investments in equipment for factories dedicated to mixed signals and power components.



COVID-19 leaves deep impact in German components Distribution

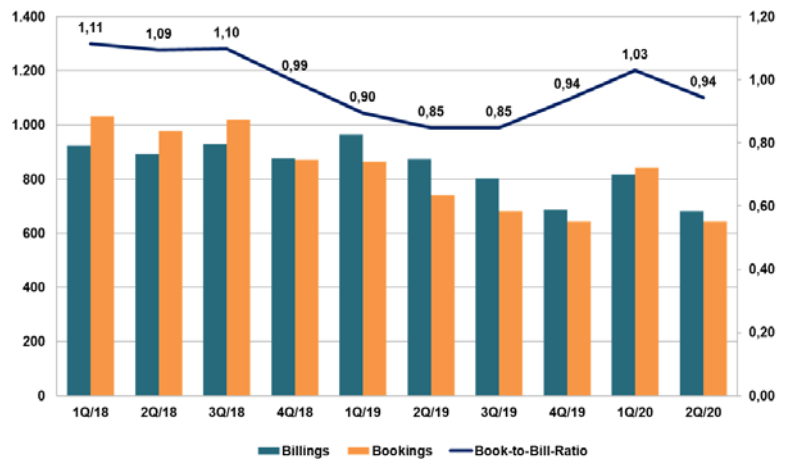
GEORG STEINBERGER, DMAS & IDEA



German Component Distribution (according to FBDi association) shrinks by 22% in the second quarter. Orders fall by 13%. Hope for recovery at the end of the year. FBDi urges politicians to drive innovation boom.

The COVID 19 lockdown in Germany, which paralyzed large parts of industrial production since April, has left deep marks on the order and sales development of the German components distribution business. Sales of the distribution companies organized in the Fachverband Bauelemente-Distribution (FBDi association) fell by 22% to € 682 million. The order situation developed similarly negatively: -13% to € 643 million. At 0.94, the book-to-bill rate fell back to the 2019 level.

ELECTRONIC COMPONENTS MARKET GERMANY in million € Figure 1

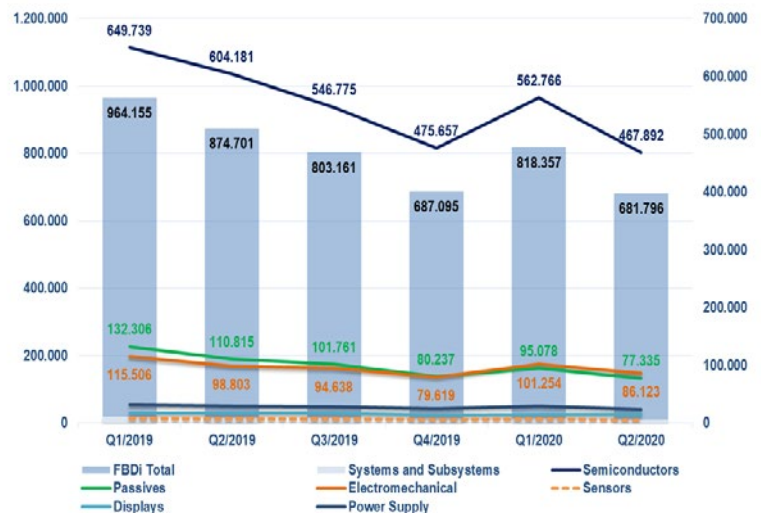


Source: FBDi e V. - August 2020

“THE COVID 19 LOCKDOWN HAS LEFT DEEP MARKS ON THE COMPONENTS DISTRIBUTION BUSINESS”

At the product level, the -29% for passive components stands out particularly, having lost further ground to semiconductors (-17.8%) and electromechanics (-12.6%). In absolute figures, semiconductors posted sales of € 468 million, passive components €77 million, electromechanics € 86 million and power supplies € 24 million. Regarding the distribution by components type, semiconductors account for 69% of total sales, passives only 11%,

FBDI GERMANY BY PRODUCT GROUP Figure 2



Source: FBDi e V. - August 2020

electromechanics 13%, power supplies 4% and all other product groups together 3%.

FBDi Chairman of the Board of Directors **Georg Steinberger**: *“After the events of the past few months this slump is not surprising. Many customers have postponed their orders, the situation in the supply chain is not very transparent, there is still a lack of transport capacities from Asia. We assume that after the summer break there will be a reset or stock-taking and thus a reassessment of future demand for components, positively or negatively. The positive development in some production areas in Asia is not going to change this.”*

“THE POSITIVE DEVELOPMENT IN SOME PRODUCTION AREAS IN ASIA IS NOT GOING TO CHANGE THIS”

Interestingly, the psychological situation has turned completely around and is the opposite of the real trend, says Steinberger: *“While the IMF forecasts for 2020 a 7.5% decline in economic output in Europe (Germany is down 7%), the mood in the economy is positive. The PMIs (Production & Manufacturing Indices) published by IHS Markit rose throughout Europe, in some cases well above the 50 mark, signifying hope for growth. If the positive mood turns into growth in the second half of the*

year, the distribution of components will also have an interesting autumn ahead”.

“RENEWABLE ENERGIES ARE BEING BLOCKED RATHER THAN PROMOTED”

However, from FBDi’s point of view, Steinberger believes that there is a lack of incentive from politics to use technology for social change towards sustainability and climate protection: *“We know that technology cannot do everything and cannot make up for all the sins of the past. We also know that technology has its own challenges such as electronic waste, conflict minerals and the like that we have to work on”.*

“But, what we would like to see, is that at a time when billions and billions of Euros are being spent to save all kinds of economic sectors, at least some impetus for innovation is given to make our country more sustainable, more digital and more climate-neutral. It is shameful that climate policy has been at a standstill for 15 years by now.

Renewable energies are being blocked rather than promoted, more environmentally friendly drives are falling victim to lobbying and digital offensives are predominantly paper tigers that are drowning in federalism chaos. Where is the long-term oriented innovation boom?”





New RF coax connectors evolve as emerging technologies demand greater performance

The IoT, 5G, and advancing technologies across markets have led to smaller, higher performance RF coaxial connectors. There are times when economics and technical advances join to produce major changes in new applications, prompting the next generation of components to provide needed results. Even with the uncertainties caused by the COVID-19 pandemic, the advances prompted by 5G, the Internet of Things (IoT), new threat scenarios in military and space involving signal intelligence and electronic warfare capabilities, plus continued trends for miniaturization, commercial-off-the-shelf (COTS) connectors, and faster and better performance, including testing, interactive machine-to-machine (M2M) production, and connected cars, make this a challenging time for the RF coaxial connector industry. Supply chain sourcing problems have been exacerbated by the pandemic. Material and process challenges are an ongoing issue, from important subtleties such as the use of arsenic-gold hardening agents when the EU says “no,” adding electro-polishing to achieve low passive intermodulation (PIM), or just providing

higher temperature capability for lead-free solder processing for already-installed field-replaceable and compression-mount coax connectors.

“SUPPLIERS OF ELECTRICAL CONNECTORS, CONTINUE TO PRODUCE NEW VARIATIONS TO KEEP PACE WITH APPLICATION ADVANCES,,

Today’s advanced requirements can push the limits of design and production. For microwave and higher frequency applications, buyers should obtain test reports to confirm performance.

Suppliers of electrical connectors, and especially RF coaxial types,

RON BISHOP, BISHOP & ASS.



continue to produce new variations to meet industry needs and keep pace with application advances. Most RF coaxial connectors can be used in many different end-use applications and markets. This makes attempts at defining end-use applications and markets difficult. For example, the same 2.92mm connector could be used in medical imaging equipment and satellites plus radios and test equipment, while the new E-band 1.35mm connectors are suitable for 5G backhaul systems, connectorized microwave components, test systems including vector network analyzers (VNAs), and self-driving vehicles. RF connectors are also being designed to replace waveguides and support frequencies above the 145GHz provided by Anritsu's 0.8mm connectors.

“THE MARKET FOR 5G SMALL CELLS WILL BE ONE OF THE FASTEST GROWING SEGMENTS”

Rosenberger provides a wide product range of solderless PCB connectors designed to satisfy challenging test and measurement demands. The product spectrum includes cost-effective solderless PCB connectors for standard applications with frequencies up to 70GHz, high-performance solderless PCB connectors for frequencies up to 110GHz, and test PCBs assembled with two PCB connectors.

NEW CONNECTOR DEVELOPMENTS INSPIRED BY 5G AND IOT

RF coax connectors are increasingly important as the number of fixed communications and wireless enabled devices and the amount of data consumed grows at an almost unfathomable rate. The global forecast is for over 2.7 billion 5G connections by 2025 (per CCS Insights). The COVID-19 pandemic has slowed the standardization work needed to enable availability of 5G for enterprise implementations. Limitations occurring during today's different work scenarios will add to pent-up demand to assure fast growth.

Bishop & Associates forecasts that by 2025, 21% of all worldwide cellular connections will be 5G, which offers great potential for RF coax connectors, ranging from ultra-miniature board-to-board (B2B) for handheld and mobile devices to higher power and lower PIM connectors for base stations, and V- and E-band interconnects for greater bandwidth backhaul sites, plus all the associated infrastructure equipment, cables, and adapters.

The market for 5G small cells will be one of the fastest growing 5G segments, as installations in population-dense areas may be as close as 100 yards apart as well as layered within larger buildings. This will involve families of new coax connectors such as NEX10, 2.2/5, and 1.5/3.5 DIN, together with myriads of multi-port assemblies for antenna housings that can have upwards of 30 cable entries.

