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Opinions expressed by the authors of studies do not necessarily reflect the official viewpoint of the Oesterreichische Nationalbank or of the Eurosystem.

Analyses

Global Economy Continues to Recover

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The economic recovery, which had started in Asia and then quickly spread to the U.S.A., recently lost momentum in both regions. In the second quarter of 2010, the U.S. economy recorded real GDP growth (in annualized terms) of a mere 1.7% quarter on quarter, following 3.7% in the first three months of 2010 and 5.0% in the final quarter of 2009. In Japan, quarterly real GDP dropped to 0.4% in the second quarter of 2010 from 1.2% in the first quarter. Meanwhile, the global economy continues to benefit most from the momentum of the Asian threshold countries. China, which has replaced Japan as the third largest economy (after the U.S.A. and the euro area), posted 10.3% growth in the second quarter of 2010, only slightly less than in the previous quarter. In light of its vibrant import performance, China's current account surplus is likely to be lower in 2010 than it was in 2009.

In contrast to global developments, the European economy saw a growth spurt in the second quarter of 2010 thanks to unexpectedly favorable developments in Germany, which compensated for problems in the southern and western periphery of the euro area. Growth was driven above all by international trade, with the low euro exchange rate recorded in spring supporting the pickup of exports. In the second quarter of 2010, real GDP in the euro area climbed by 1.0% on the previous quarter, i.e. more strongly than expected. All euro area countries, excluding Greece, posted an expansion, with Germany being the main driver (2.2%). According to the most recent forecasts, the euro area is expected to rebound more markedly than previously envisaged. At an unchanged 10.0%, the seasonally adjusted unemployment rate for the euro area recorded in July 2010 continued to mark the highest value in twelve years. At 1.8%, the inflation rate remained moderate in September 2010. The latest forecasts do not point to any threats to price stability up until end-2011.

The gradual economic recovery, which had become evident in the Central, Eastern and Southeastern European (CESEE) countries at end-2009, stabilized in the first six months of 2010, as the region, on balance, posted clearly positive quarter-on-quarter growth rates. Restocking and exports continued to buttress the economy, while consumption and investment did not foster growth in a sustainable manner. Despite a slight increase, inflation still remains at a relatively modest level. Financial markets have quieted for the time being after the turbulence of early summer 2010. In some countries, however, the situation remains highly uncertain.

After an exceptionally powerful economic revival in Austria mid-2010, the OeNB expects continued robust economic activity in the second half of 2010 and a slowdown in line with world trade developments toward the end of the year. In 2010 as a whole, the Austrian economy is expected to grow by almost 2% on the back of animated export demand. Considering that the recession was very pronounced, the current upturn is fairly restrained, and domestic demand is still too weak for a self-sustained upswing.

1 Global Economic Growth Slows but Remains Robust

1.1 U.S.A.: Economic Sentiment Deteriorating

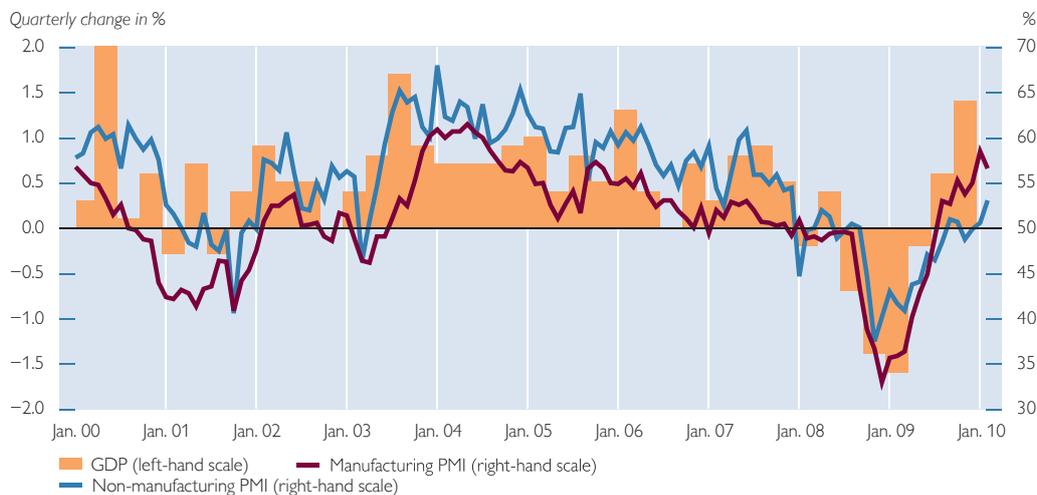From January to June 2010, the U.S. economy grew at a solid pace, with real *GDP* increasing by 3.7% and 1.7% (annualized) quarter on quarter in the first and second quarter of this year. All expenditure components, excluding net exports, contributed to the robust increase in the second quarter, with particularly important contributions coming from inventory changes, gross fixed capital formation and private consumption.

Chart 1

U.S.A.: Purchasing Managers' Index (PMI) and GDP Growth

Quarterly change in %   %

[Chart: GDP (left-hand scale), Manufacturing PMI (right-hand scale), Non-manufacturing PMI (right-hand scale), Jan. 00 to Jan. 10]

■ GDP (left-hand scale)   ▬ Manufacturing PMI (right-hand scale)
▬ Non-manufacturing PMI (right-hand scale)

Source: Institute for Supply Management (ISM), Bureau of Economic Analysis (BEA).

Increasing investment activity notwithstanding, numerous *leading indicators* point to an economic slowdown and a U-shaped recovery in the U.S.A. While in spring 2010 industrial production – and thus purchasing manager sentiment – had continuously risen, these figures started to downtrend in early summer. The U.S. Purchasing Managers' Index consequently dipped markedly from April to July 2010, yet stabilized again at least in August. In addition, while capacity utilization has started to improve, it does so at a very slow pace. In August 2010, it edged up slightly to 74.4%, continuing the modest increase since the beginning of the year, while still remaining at a historically low level. Further recent data likewise signal that the economic recovery is likely to lose speed. Moreover, consumer sentiment has weakened again considerably. More precisely, the *Conference Board* indicator on consumer sentiment had dropped by close to 10 percentage points from May to August 2010, when it rose again for the first time since May. Growth in the first half of 2010 was above all attribut-

able to government stimulus packages that are now set to expire and to restocking activity.

Labor market developments will, as usual, be key in determining the fate of the U.S. economy. After the winter 2009/10 record high of 10% and modest declines in spring, unemployment climbed back up to 9.6% in August 2010. New claims for unemployment benefits, however, recently decreased again somewhat. Whether or not the labor market will rebound further will depend on the performance of the construction sector. The unexpected slide in *productivity* by 0.9% in the second quarter of 2010 is a red flag. This decline – the first one since the final quarter of 2008 – is a further sign of a weakened U.S. economy. Even though the U.S. labor market seems to have principally turned around in 2010, the for U.S. standards extremely high unemployment rate is not expected to decline significantly. Unemployment has stayed above 9% for 16 months in a row now, a record in the past 25 years.

In its September 2010 Federal Open Market Committee (FOMC) meeting,

the Federal Reserve System concluded that the recovery of output and employment had lost momentum over the past months. While gradually on the rise, household expenditure remains weak owing to the high joblessness rate, modest income growth and other factors, such as credit constraints. The Fed forecasts GDP to grow between 3.0% and 3.5% in 2010 and between 3.5% and 4.2% in 2011. By contrast, *Consensus Forecasts* predicts much more pessimistic growth rates, namely 2.7% for 2010 and 2.4% for 2011. Most experts nevertheless do not expect the U.S. economy to slide back into recession.

The real estate market is unlikely to reemerge as a driver of growth for the troubled U.S. economy for the time being, as the recovery of *residential housing* seems rather sluggish and construction investment has shrunk to a mere 2.5% of GDP, from 6% before the crisis. The *Case-Shiller* price index for single-family homes rose four times in a row year on year in early summer 2010. In August 2010, the number of house sales declined on the previous month, but new home construction projects and permits increased more strongly than expected against the previous weak months. The August 2010 figures nevertheless underperform the values recorded in previous years.

The annual CPI *inflation rate* was measured at 1.1% in August 2010, while core inflation came to 0.9%. In light of the economic slowdown expected for fall 2010, the Fed pegs annual inflation to drop to an average 1%. Since December 2008 the target range for the *federal funds rate,* i.e. the U.S. key interest rate, has been unchanged at 0% to 0.25% and the Fed intends to keep it on this level for an extended period. In September 2010, the FOMC signaled its readiness to make further adjustments, if need be, to support the recovery.

The Great Recession has led to a significant reduction in global imbalances. As a case in point, the U.S. *current account deficit* halved from 6.0% of GDP in 2006 to 2.9% of GDP in 2009. This development will, however, most likely not result in a structural change, even though President Obama has set the goal of doubling U.S. exports by 2015. The OECD expects higher deficits again for 2010 and 2011.

According to the most recent forecast of the House Committee on Budget, the U.S. *budget deficit* will run to 9.1% of GDP in the current fiscal year and net government debt will rise from 53% of GDP (2009) to some 66% in 2011. In September 2010, President Obama announced further economic stimulus packages and tax breaks for U.S. businesses. This way, USD 50 billion are to be invested into the public infrastructure, and Obama's plan will allow all companies that invest in plants and equipment to write off the full amount of capital investments made through the end of 2011. The latter measure would cut business taxes by nearly USD 200 billion over the next years.

In mid-July 2010, the U.S.A. unveiled new financial market regulations. The overhaul strengthens supervision in all areas of the financial market. The reforms are meant to reduce the risks bank take by either banning them from or limiting their involvement in particular high-risk operations. Moreover, the Fed will house a central consumer protection body for financial services and regulators will in the future be authorized to liquidate failing financial firms in an orderly fashion.

1.2 Japan: Economic Growth Lost Considerable Momentum

The Japanese economy is very likely to expand at a faster pace in 2010 than all major European countries, with the exception of Germany. In the second quarter of 2010, real *GDP* increased by 0.4% on the first quarter, when it still had grown by 1.1%. While in the first quarter all expenditure components had contributed to growth, in the second quarter, growth was driven only by exports, irrespective of the strength displayed by the Japanese yen. Domestic demand accounted for a negative contribution. In contrast to other industrial nations, the Japanese *labor market* proved surprisingly resilient in winter 2009/10, but as from spring 2010 unemployment rose again somewhat, yet dropped to 5.2% in July 2010. Joblessness thus lies 0.3 percentage points above the relatively low level recorded in February 2010.

Recent *leading indicators* suggest that the recovery is likely to continue in 2010, though at a reduced level. The quarterly *Tankan* survey, considered to be Japan's most important sentiment indicator, rose an unexpected 15 points according to the June 2010 results, thus returning to positive territory again for the first time in two years. In other words, businesses taking an optimistic view for the first time again outnumber the pessimists. The favorable economic conditions were also corroborated by industrial production growth in July 2010. In the same month, the weakening of the Japanese purchasing managers' index, of business sentiment and of machinery orders, however, reflected the uncertainty that prevailed.

Japan has yet to head off deflation. Even though up to June 2010, the price decline had slowed down clearly relative to January, in July, the annual CPI *inflation rate* again posted −0.9% and the core inflation rate −1.5%. At −1.8%, at least the GDP deflator showed a significant quarter-on-quarter improvement in the second quarter of 2010 (Q1 2010: −2.8%). The *Bank of Japan* (BoJ) nevertheless expects that the rate of price decline will slow down again over the course of 2010, which implies that it will maintain its highly accommodative monetary policy. International institutions expect prices to fall through the third quarter of 2011. In light of the strong yen, the BoJ once more increased its credit facility by EUR 90 billion in August 2010. Under continued pressure from the Japanese government, the central bank decided in August 2010 to maintain its key interest rate at 0.1% and has thus not changed the overnight call rate since December 2008.

At 217%, Japan's gross debt-to-GDP ratio was the highest among industrial nations in 2009, and according to the IMF, Japan's *debt* could rise to 248% of GDP by 2015. This notwithstanding, the country has so far not been sucked into a debt crisis. Japan's new prime minister, Naoto Kan, has thus pledged to rein in its massive public debt, citing this as one of his most important objectives. Since the beginning of 2010, the Japanese yen has appreciated significantly against the euro and less so vis-à-vis the U.S. dollar. This appreciation poses a great challenge to Japan's export-dependent industrial sector.

1.3 China: Growth Slowed Down, but Remains Very Solid

China's business cycle has already peaked once after the crisis. In the first half of 2010, real *GDP* expanded by 11.1% year on year (Q1 2010: 11.9%, Q2 2010: 10.3%). Consequently, China has eventually replaced Japan as the third largest economy in the world.

Industrial production jumped from January to June 2010, outperforming the respective year-earlier figures by one-sixth. For over a year the Chinese purchasing managers' index has stayed above the 50-point mark, but declined recently.

Following its deflation spell in 2009, China again clocked positive *inflation rates* in 2010. In August 2010, the annual CPI inflation reached 3.5%, the highest value in almost two years. Unlike counterparts in other emerging countries, the Chinese central bank has so far left its key interest rate unchanged at 5.3% in 2010. It has, however, raised minimum reserve requirements for large banks in three steps. In the first half of 2010, the four large state-run Chinese banks reported significantly higher profits with gains between 25% and 40%.

The *trade volume* of the People's Republic of China grew by more than 40% on the previous year in the first half of 2010, totaling over USD 1,300 billion. This increase was primarily attributable to imports (+52%), which expanded more markedly than exports (+35%). Owing to the strong performance of imports, China's overall 2010 current account surplus is estimated to shrink to 2.8% of GDP from 6.1% in 2009. The growth in China's *currency reserves* almost came to a halt in the second quarter of 2010, when they edged up by a mere USD 7 billion to a total of USD 2,454 billion. Since spring 2010 China has been slowly shifting its portfolio of currency reserves to include more assets denominated in Japanese yen.

In mid-June 2010, China discontinued *the renminbi yuan's peg to the U.S. dollar* and returned to the regime that had been in place up to July 2008. The *renminbi* is thus again pegged to an undisclosed basket of currencies, which is believed to be dominated by the U.S. dollar and the euro. The People's Bank of China sets a daily reference rate, and the daily trading band against the USD is +/−0.5% (September 21, 2010: USD/CNY 6.70). The renminbi did not, as expected by some experts, show a one-off abrupt increase in value; it gained less than 2% on the U.S. dollar from mid-June to mid-September 2010.

The real estate market in China is slowly cooling off, with the measures implemented by the government in spring 2010 seemingly taking effect. In April, the government raised down-payment requirements, curbed mortgages and announced that it would increase the land supply available for residential property. Under its Article IV consultation with the People's Republic of China, the IMF in July 2010 likewise concluded that, at a national level, property prices did not seem to be significantly above fundamentals.

2 Euro Area Economy Proves More Resilient than Expected

2.1 Growth Surprisingly High in Second Quarter 2010

While the recovery of the global economy picked up steam in spring 2010, that of the euro area progressed at a modest pace. After real *GDP* climbed by 0.3% in the first quarter of 2010, its growth accelerated to 1.0% in the subsequent quarter. From April to July 2010, economic output advanced by 1.9% quarter on quarter. The GDP *expenditure breakdown* paints the following picture: The subdued growth of the first quarter was mainly driven by short-term factors (restocking), while in the second quarter, all components — especially investment and private consumption — made a contribution.

Chart 2

Contribution to Real GDP Growth in the Euro Area

Quarterly changes in percentage points and in %

Net exports (goods and services)
Government consumption
Changes in inventories and statistical discrepancy
Gross fixed capital formation
Consumer spending and NPISH
GDP
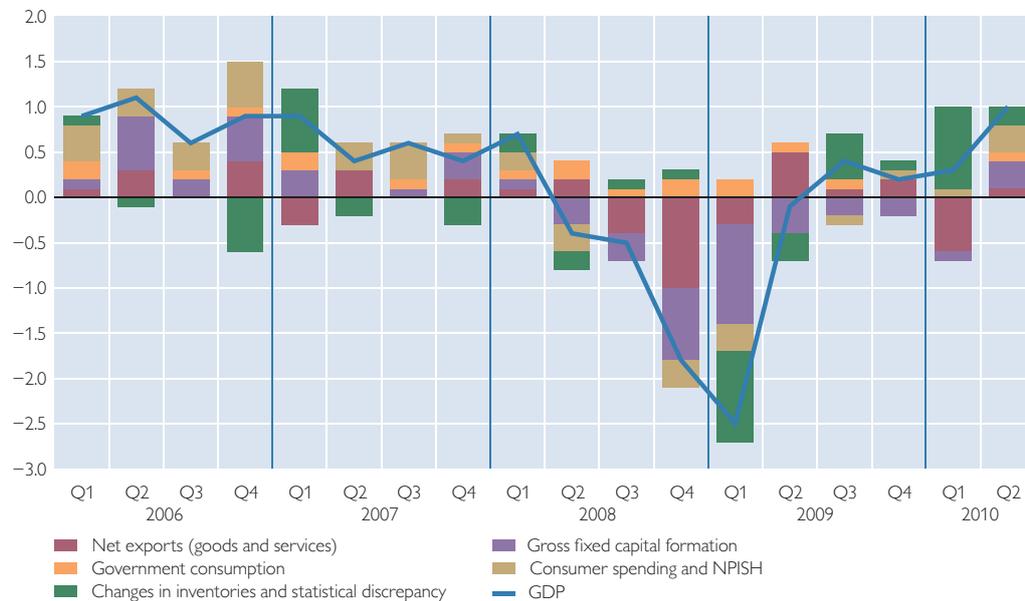
Source: Eurostat.

Private consumption increased in the second quarter of 2010 against the previous, still very subdued, quarter. Against the backdrop of high unemployment rates in the euro area, such growth is somewhat surprising. Gross fixed capital formation increased again considerably quarter on quarter (but not year on year) in the second quarter of 2010. Public spending grew both on the previous quarter and on the previous year in the second quarter of 2010. The momentum emanating from exports driven by the recovery in world trade is masked by rising imports, which is why the contribution of net exports to growth is marginal in the euro area.

The momentum of euro area growth reflects increasingly *heterogeneous developments in economic activity* across the single currency area. Since the economy hit bottom in the first quarter of 2009 euro area countries have been recovering at different rates.

Posting a growth rate of 2.2% in the second quarter of 2010, the German economy expanded at a speed last seen in 1987; in addition, the first-quarter figures were revised upward to 0.5%. France's quarterly growth rate likewise attests to relatively robust growth (0.6%). At the euro area periphery, Italy advanced at a rate of 0.4% and Spain and Portugal each at 0.2%. Except for Greece (–1.5%), no euro area country continued to register negative growth rates in the second quarter of 2010 (the data for Ireland, Luxembourg and Malta were not yet available, though). These developments show that the structural imbalances in the euro area still exist. The peripheral EU countries continue to be faced with greater internal and external rebalancing needs than the core countries. Yield spreads for government bonds reflect these difficulties on international financial markets, which, in turn, aggravates the weakness in growth.

Chart 3

Business Climate Indicators in the Euro Area

Deviation from the mean value of the indicator relative to the standard deviation
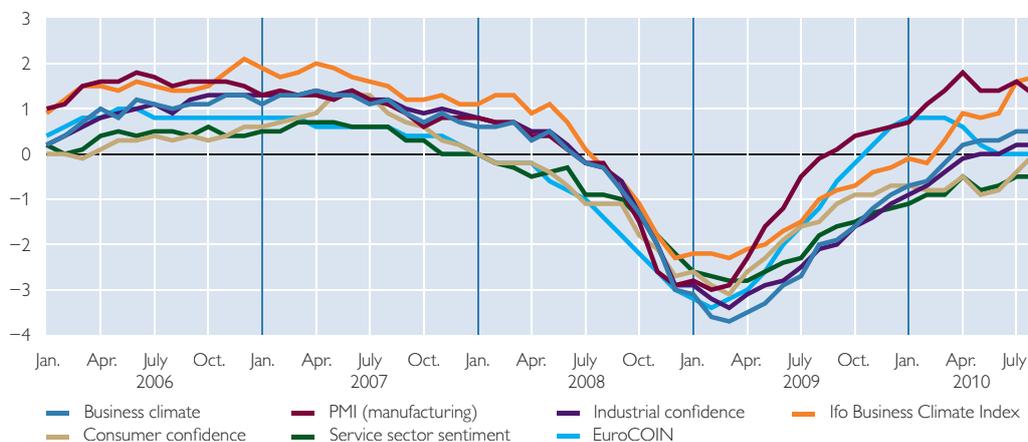
Source: European Commission, NTC, ifo, FTD, CEPR, Eurostat, OeNB.

2.2 Leading Indicators Paint Heterogeneous, yet Positive Picture

The leading economic indicators continue to paint a heterogeneous, yet positive picture. While stagnating in June and July 2010 following months of solid growth, *industrial production* nevertheless posted high year-on-year growth rates. The recovery track of the industrial sector is therefore more solid than anticipated. On the other hand, the previous ascent of survey-based confidence indicators is flattening out after approximately one year of continuous growth. The European Commission's *Economic Sentiment Indicator* continued to improve, while the industrial confidence subindicator stabilized. The *purchasing managers' index* in the industrial sector decreased slightly, yet still remained at a high level. Consumer and service sector sentiment likewise brightened recently, while the outlook in trade and construction remained unchanged. According to the *Ifo Business Climate Index* of the ifo Institute for Economic Research, the majority of surveyed businesses in Germany (except for the construction industry) con-

sider the current economic situation favorable, while business expectations flattened further recently.

2.3 Has Unemployment Reached Its Peak?

As if on cue from the brighter growth outlook, conditions in the labor market have slowly begun to ease. In July 2010, the unemployment rate in the euro area came to 10.0%, around 0.4 percentage points higher than a year earlier. With the exception of four countries (Germany, Austria, Finland, Malta), in most euro area countries unemployment has yet to peak. Compared with the previous month, Italy, Cyprus, Austria, Portugal and Slovenia managed to reduce the rate of joblessness in July 2010. In Germany, a relatively low number (6.9%) of the working-age population is out of work. In Spain, unemployment rose further and ran to 20.3% in July. Even though the unemployment rate in the euro area has remained at 10.0% since March 2010, it might not have peaked yet. In the face of recent data, the spring forecasts by the European Commission anticipating

a further rise in unemployment to 10.3% (2010) and 10.4% (2011) seem to be too pessimistic.

2.4 Brighter, but More Mixed Forecasts

According to the latest *forecasts,* the recovery is set to progress at a slow pace in the next quarters. Growth predictions for 2010, which have mostly been revised upward since fall 2009, range from 0.9% to 1.7%. The European Commission's forecast lies at the upper end of this spectrum. The ECB staff projections of September 2010 contain a significant upward revision for the current year, compared with the June projections. For 2010, ECB forecasters expect real GDP gains in the range of 1.4% to 1.8%.

Increased export demand – most likely even above pre-summer expectations – will continue to buttress the economic recovery. The expansion of the global trade volume stayed on course in spring and summer 2010. On the other hand, considerable downside risks pertain to new tensions in financial markets, uncertainty about the growth outlook in some advanced economies and another hike in oil and other commodity prices. ECB experts forecast growth to be between 0.5% and 2.3% in 2011; this reflects a slight upward revision compared with the June 2010 projections.

2.5 Budget Consolidation Started in Most Countries

According to the European Commission's spring forecast, the *budget deficit* in the euro area will increase to an average 6.6% in 2010. The year 2011 should see the turnaround at 6.1%; these figures may even be revised downward, given most Member States' profound consolidation efforts. The budget deficit in 2010 will not be below the Maastricht criterion of 3% of GDP in any of the euro area Member States, with the exception of Luxembourg. In 2011, deficits are expected to at least decline in most countries owing to fiscal consolidation measures.

Recently, the countries at the euro area periphery generally showed a positive fiscal policy trend. As a case in point, budget consolidation has to date progressed quite well in Greece. By contrast, Ireland's budget deficit revision over the summer of 2010 gives cause for concern. In its recent quarterly report, the *Central Bank of Ireland* anticipates the general government deficit (Maastricht definition) to rise to between 17% and 19% of GDP in 2010. This expected upward revision (which contrasts with a planned deficit ratio of 11½% of GDP) is ascribable to capital injections for *Anglo Irish Bank* and maybe also for *Irish Nationwide,* which may have to be reclassified as capital transfers with the effect of increasing the budget deficit.

2.6 Inflation Remains Modest

In 2010, annual *inflation* (HICP) ranged between 0.9% and 1.8% (September). HICP core items (excluding energy and unprocessed food items) have continued to contribute to disinflation. In August 2010, the core inflation rate remained at 1.0% year on year. This very modest increase over the past few months is in part attributable to the gradually contracting output gap (robust growth, capacity utilization increased to 77.4% in the third quarter and unemployment stabilized). More dynamic activity in the euro area is likely to increase price pressures on the core HICP items. For the time being, however, labor costs and producer prices are still rising at a moderate pace. Likewise, weak money and credit growth suggests that inflationary pres-

Chart 4

HICP Components

Percentage points and %

Services
Processed food including alcoholic beverages and tobacco
Energy
Nonenergy industrial goods
Unprocessed food
Overall HICP in %
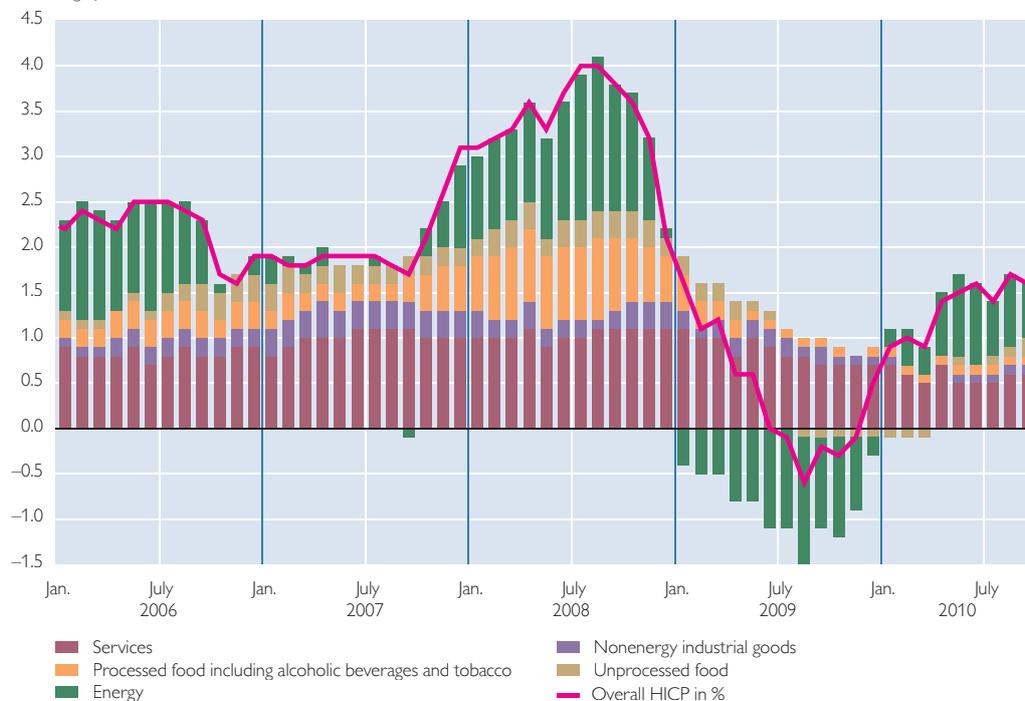
Source: Eurostat.

sures will remain contained in the medium term.

The yield curve of inflation-linked bonds indicates that inflation expectations in the financial markets are decreasing. Longer-term inflation expectations, which have been more volatile since the crisis, are still in line with the Eurosystem's objective of price stability. Short-term consumer inflation expectations surveyed by the European Commission again turned positive in March 2010, continued to rise until May and stabilized in the summer, which implies that the majority of respondents expects prices to rise.

In its most recent staff macroeconomic projections, the ECB slightly revised upward its inflation forecast to between 1.5% and 1.7% for 2010 and between 1.2% and 2.2% for 2011. Equally, the current projections issued by international institutions and *Con-*

sensus Forecasts show that HICP inflation is likely to hover around 1.5% in 2010 and 2011. Overall, there are still neither pronounced inflation nor deflation risks. According to the ECB Governing Council, risks are currently on the upside (due to higher commodity prices and indirect taxes) rather than on the downside (due to weak domestic cost dynamics).

Having remained fairly stable in the winter of 2009/10, crude oil prices turned more volatile in spring 2010. The price for one barrel of crude reached a level of more than USD 87 for a short time in early May 2010 but fell to USD 75 by mid-September and to an even lower level afterwards. The prices of crude oil futures suggest that the oil price will remain below the USD 80 per barrel level for the rest of 2010. External price pressures eased during the summer, with the *euro*

regaining some ground against the U.S. dollar over the past few months. At present, the euro's exchange rate against the U.S. dollar is still some 20% below its relative record levels of early December 2009. In historical terms, however, the euro continues at a high level against the U.S. dollar. The euro fell sharply against the Japanese yen and the Swiss franc and less so against the pound sterling in 2010. Overall, the euro's nominal effective exchange rate stabilized during the summer but is likely to continue to provide support to European exports.

2.7 Euro Area Interest Rate Level Remains Low

At its last (September 2, 2010) meeting before the cutoff date for data, the Governing Council of the ECB decided to leave the *interest rate* on the main refinancing operations of the Eurosystem, as well as the interest rates on the marginal lending facility and the deposit facility, unchanged at 1.00%, 1.75% and 0.25% respectively. Furthermore, the Governing Council decided to keep its *extraordinary liquidity support measures* in place as long as necessary. The main refinancing operations and one-month refinancing operations[2] will continue to be conducted as fixed-rate tender procedures with full allotment until at least January 2011. The fixed-rate tender procedure with full allotment will also be used for the regular 3-month longer-term refinancing operations scheduled for October, November and December 2010.

These decisions ensure that the euro area banking system will continue to receive liquidity over extended periods at very favorable conditions, promoting lending to the euro area econ-

omy and, consequently, further supporting the recovery. At the same time, the decisions pre-empt distortions that might arise from an unduly long maintenance of the extraordinary liquidity measures.

The Euro Overnight Index Average (EONIA) stood at an average 40 basis points over the past six months (with the exception of the fluctuations seen in the last few days of the maintenance periods), that is slightly above the level of September 2009. In an environment of relatively ample liquidity, the *monetary aggregate* M3 resumed expansion after having contracted in the winter 2009/10 and in the spring of 2010.

In July 2010, annual monetary growth returned into positive territory (0.2%), the underlying pace of monetary expansion is expected to remain moderate, however. At 1.2%, the monthly growth rate was slightly positive in July but clearly lower than in the previous month. The M3 growth rates indicate that the influence of the still steep yield curve has been gradually waning. Still, adjustments in monetary assets accumulated in the past continue to weigh on monetary growth. The inflows recorded in July were mostly confined to M1 and M2.

The *yield spread* between German 10-year *government bonds* and other euro area government debt of the same maturity moderated temporarily as the euro's external value rebounded but widened considerably in the past few weeks, not least because the German yields contracted by about 1 percentage point on spring 2010. The 10-year government yield spread between Germany and the euro area peripheral states in mid-September ranged from less than 200 basis points (Spain) to

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[2] *Refinancing operations with a special term of one reserve maintenance period.*

under 400 basis points (Portugal and Ireland) and over 900 basis points (Greece).

3 Economic Developments in Central, Eastern and Southeastern Europe

3.1 Gradual Recovery Taking Hold

The gradual recovery of the economies of the EU Member States in Central, Eastern and Southeastern Europe (CESEE) continued in the first half of 2010. In the second quarter of 2010, seasonally adjusted growth averaged 0.9% (quarter on quarter) in the countries under review, and in none of these countries did the economy contract. The growth differentials between these countries are still fairly considerable, however. The mainstay of growth across the region has been the buoyant economic activity observable in the majority of central European economies for several quarters. Poland has been playing a key part: The region's largest economy by far, it was the only country under review that did not slide

into recession in 2009, and it continued to post positive growth rates in 2010 so far. The dynamics in the Baltic states, in Southeastern Europe and in Hungary, in contrast, were significantly weaker and more volatile. By and large, the situation seems to stabilize gradually also in these countries, which are likely to return onto a moderate growth path.

These current developments have been driven in particular by restocking and exports. Exports started to contribute positively to growth in all countries in the fourth quarter of 2009 or the first quarter of 2010. In the latest readings, many countries posted even two-digit export growth (e.g. Slovakia, the Czech Republic, Hungary, Romania and Estonia). These dynamic developments are attributable to rising international demand against the background of strong global growth in the first half of 2010 and expanding world trade. The region has particularly benefited from favorable developments in the euro area, especially in Germany,

Chart 5

GDP Growth on a Quarterly Basis

%, seasonally adjusted
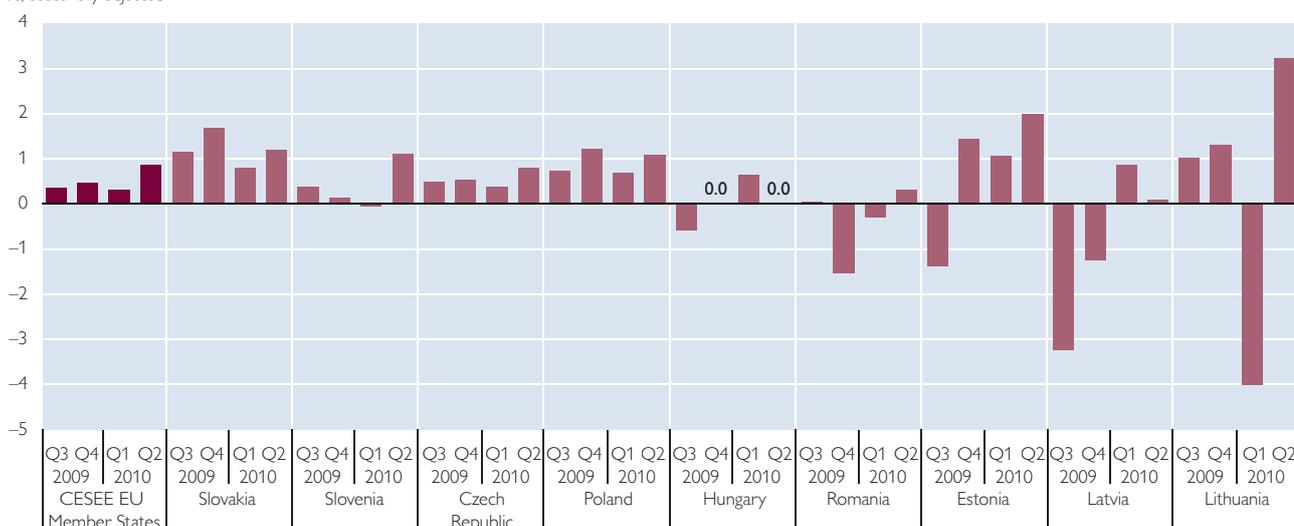
Source: Eurostat.

Note: Eurostat does not publish seasonally adjusted data for Bulgaria, which is therefore not included in the CESEE EU Member States aggregate.

Chart 6

GDP Growth on an Annual Basis

Percentage points and %, not seasonally adjusted

Private consumption
Net exports
Public consumption
Statistical discrepancy
Gross fixed capital formation
◆ GDP growth in %
Changes in inventories

Source: Eurostat.

in the period under review. Thanks to the region's close integration in the European production chain, strong export growth stimulated imports too (due to the import of intermediate goods), which notably dampened the contribution of net exports in some countries.

At the same time, neither consumption nor fixed capital formation have visibly contributed to growth in any of the CESEE countries (with the exception of Poland) recently, which is due to the continuously adverse labor market situation, very moderate wage dynamics, weak loan growth and persistently bel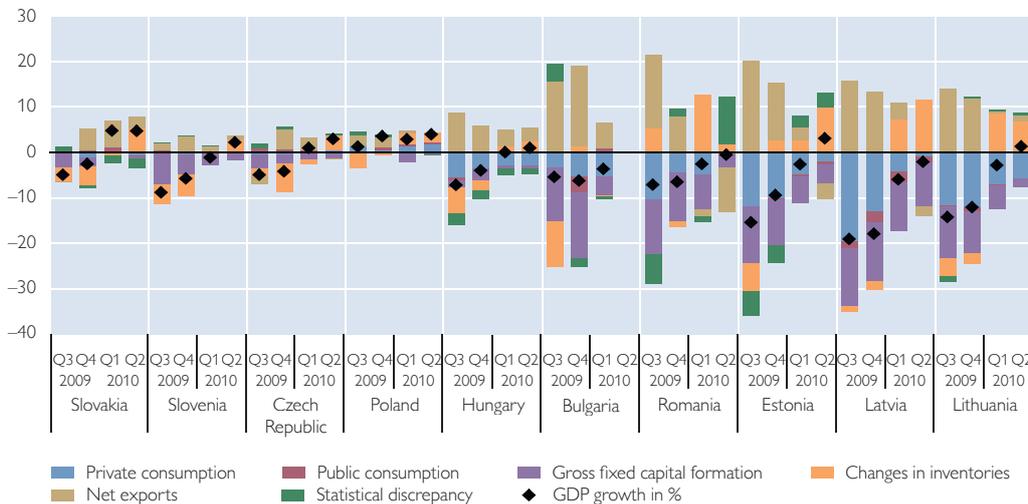ow-average capacity utilization. Compared with the previous quarter, however, domestic demand started to provide some positive impetus in the Czech Republic and Lithuania, with, in particular, investment activity gathering momentum.

Key leading and sentiment indicators confirm the ongoing recovery. All sectors saw – in part substantial – improvement in the past few months, but so far industry, as a particularly export-oriented sector, has clearly benefited

most from the recovery. Industrial production, orders and sales have rebounded to levels well above their long-term averages, industrial confidence has recovered to its long-term average level and capacity utilization is on the rise again. In retail trade and construction, on the other hand, the upswing has been only subdued. Cold winter weather was one of the reasons why construction had a particularly bad first quarter of 2010, but the situation improved visibly in the spring. Retail trade sales are still feeling the impact of persistently subdued consumer demand.

Current IMF forecasts expect average economic growth in the region at 1.6% in 2010 and an increase to 3% in 2011. The IMF's most recent prediction for 2011 is less upbeat than the one of spring 2010, however, as the growth outlook for Romania, where fiscal consolidation measures (including a hike in the value-added tax rate from 19% to 24%) linked with the provision of IMF and EU aid will significantly curb growth, had to be revised downward. At the same time, however, the IMF

Chart 7

Key Leading and Sentiment Indicators for CESEE EU Member States

Leading indicators

Deviation from the mean value of the indicator relative to the standard deviation

Sentiment indicators

Deviation from the mean value of the indicator relative to the standard deviation

Leading indicators legend:
- Production in construction
- Industrial production
- Sales in industry
- Orders in industry
- Retail sales
- Car registrations

Sentiment indicators legend:
- Economic Sentiment Indicator
- Sentiment in industry
- Sentiment in construction
- Sentiment in retail trade
- Consumer confidence
- Service sector sentiment
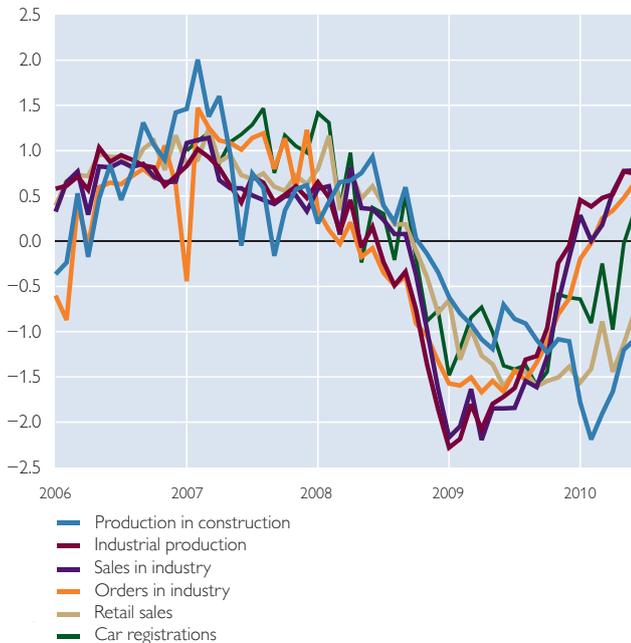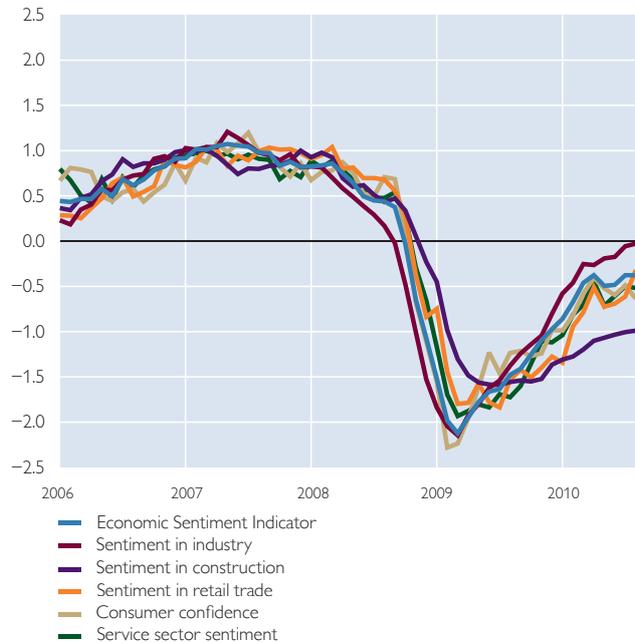
Source: Eurostat, European Commission, OeNB.

revised upward the outlook for 2011 for a number of smaller countries.

3.2 Inflation Slightly Up but Still at Relatively Low Levels in Most Countries

Inflation had been very low or even negative in early 2010 on the back of the recession but gathered pace in most CESEE countries in the early summer. The acceleration was mainly attributable to higher prices for processed food (including alcohol and tobacco) and energy. In Romania, a hike in the value-added tax rate triggered a surge in prices from July. Cyclical price growth

Chart 8

Current GDP Forecasts for the CESEE EU Member States

Real GDP growth in %

Legend:
- 2009
- 2010
- 2011
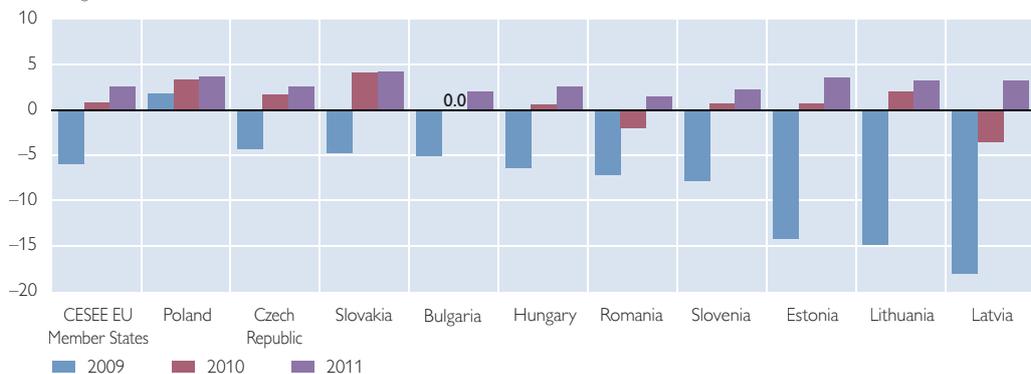
Source: IMF.

remained rather subdued, however. Core inflation accelerated notably less than headline inflation across the region and was even declining in some countries. Inflation rates were decreasing in Poland and Hungary. Both countries had seen accelerating price growth in mid-2009 against the general trend in the region. In Hungary, this was due to a hike in the value-added tax rate; in Poland, a fairly strong economy and the devaluation of the currency shortly before contributed to the rise in inflation. Therefore, a large part of the fall in inflation seen in these countries at present can be attributed to base effects. In Poland, the strong recovery of the złoty since the second half of 2009 has created an additional drag on prices.

Despite the recent rise in many countries, inflation remains generally fairly moderate across the region, averaging 3.0% in August 2010 after hitting a low at 2.5% in May. Current forecasts expect average inflation for the entire year 2010 at 2.8%; only Hungary and Romania, are expected to report considerably higher rates owing to the special factors mentioned above (value-added tax hikes in 2009 and 2010 respectively).

3.3 Financial Markets: Uncertainty Remains Elevated in Some Countries after Turbulence in Early Summer

The situation in Hungary has dominated financial market developments in CESEE in the past few months. The IMF and the EU suspended negotiations with the Hungarian government about a review of the national support program on July 17, 2010, as no agreement could be reached about the consolidation measures to achieve the budget targets for 2010 and 2011 (3.8% and below 3.0% of GDP respectively). The suspension of the talks and the adoption of a bank levy in Hungary did not have a major direct impact, neither on the Hungarian forint nor on the regional financial markets. Owing to uncertainty relating to the economic and fiscal policy plans of the new Hungarian government, however, the forint had already lost about 5% and the Budapest stock index about 10% since early May. At the same time, credit default swap (CDS) premiums on

Table 1

Price Growth in CESEE EU Member States

	2009	2010	Mar. 10	Apr. 10	May 10	June 10	July 10	Aug. 10
Annual rate of change in the HICP in %								
Bulgaria	2.5	2.2	2.4	3.0	3.0	2.5	3.2	3.2
Estonia	0.2	0.8	1.4	2.5	2.8	3.4	2.8	2.8
Latvia	3.3	−2.0	−4.0	−2.8	−2.4	−1.6	−0.7	−0.4
Lithuania	4.2	0.1	−0.4	0.2	0.5	0.9	1.7	1.8
Poland	4.0	2.5	2.9	2.7	2.3	2.4	1.9	1.9
Romania	5.6	5.9	4.2	4.2	4.4	4.3	7.1	7.6
Slovakia	0.9	0.7	0.3	0.7	0.7	0.7	1.0	1.1
Slovenia	0.9	1.5	1.8	2.7	2.4	2.1	2.3	2.4
Czech Republic	0.6	1.6	0.4	0.9	1.0	1.0	1.6	1.5
Hungary	4.0	4.7	5.7	5.7	4.9	5.0	3.6	3.6
CESEE EU Member States	**3.4**	**2.8**	**2.6**	**2.7**	**2.5**	**2.6**	**2.9**	**3.0**
Euro area	0.3	1.3	1.4	1.5	1.6	1.4	1.7	1.6

Source: Eurostat, IMF.

Chart 9

Developments in Selected Financial Market Indicators in CESEE EU Member States

CDS Premiums

Basis points

Ratings

Long-term foreign currency ratings, S&P

Czech Republic — Poland — Slovenia — Romania — Lithuania
Hungary — Slovakia — Bulgaria — Estonia — Latvia
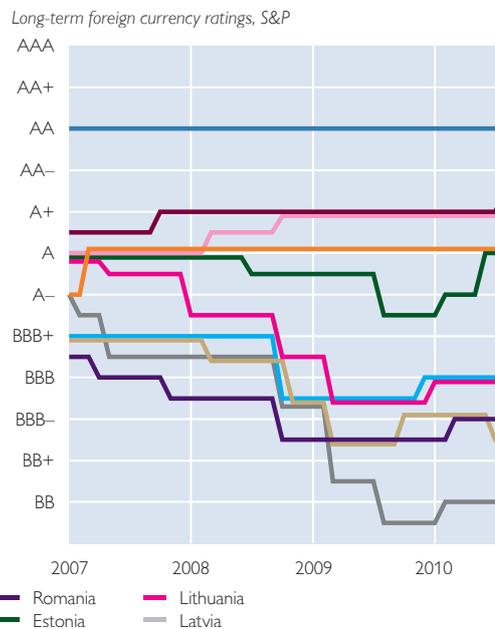
Source: Thomson Financial, Bloomberg.

Hungarian sovereign debt increased by some 150 basis points before stabilizing at around 350 basis points in the summer. In addition, Standard&Poor's (S&P) downgraded its outlook on Hungary from "stable" to "negative", and Moody's placed Hungary's ratings (currently Baa1; S&P: BBB–) on review for possible downgrade.

The situation in some financial market segments deteriorated also in a number of other CESEE countries in early May: Romania and Ukraine saw falling stock prices, CDS premiums expanded in Romania and Bulgaria, and the Polish złoty and the new Romanian leu lost some ground. These are not regional trends, however, or spillover effects from Hungary. First, the markets stabilized within a few weeks, and the situation in Romania was essentially the result of uncertainties persisting at that time as regards EU and IMF support for the country. Second, the situation in a

number of countries in the region (especially in Central Europe) was stable or even improving (e.g. in the Czech Republic); some countries (e.g. Estonia and the Czech Republic) received rating upgrades; and progress was made under current international aid programs. Nevertheless, the most recent expansion of CDS premiums shows that the financial environment remains relatively uncertain in particular in Southeastern Europe and the Baltic states, i.e. the countries whose macroeconomic recovery is lagging behind the one seen in other CESEE countries.

4 Austrian Economy Continues to Recover in the Second Half of 2010

4.1 Economy to Grow by 2% in 2010, Weakening Expected Toward Year-End

After the severe recession in the wake of the global financial and economic

crisis, the Austrian economy began to post positive growth rates again from mid-2009 but surprisingly stagnated at the beginning of 2010, which was out of step with the European trend. The weakness was related to poor weather conditions – the cold winter dampened construction activity – and temporarily subdued industrial activity. After this brief dip, the revival resumed a vigorous pace from mid-year 2010. According to the most recent national accounts results, the Austrian economy expanded by 1.2% quarter on quarter in the second quarter of 2010 (in real terms, seasonally and working day-adjusted). Year-on-year growth accelerated to just under 2½%, a level at which the rate of unemployment typically begins to fall.

The main impulses for economic activity in Austria emanated from the global recovery and above all from robust growth in Germany, Austria's main trade partner. Foreign trade has proved to be a mainstay of the current upswing. In the second quarter of 2010, seasonally adjusted real exports rose by 5% quarter on quarter. According to the most recent figures of the OeNB's export indicator, which is based on truck toll data, this trend is set to slow down only minimally in the third quarter. Toward the end of 2010, growth is likely to lose some steam in Austria's export markets, but by then, the nominal volume of goods exports will have returned nearly to the precrisis level.

Industry has benefited most from the dynamic pace of export activity. Half of the slump in output triggered by the crisis (around –20%) had been recouped by mid-2010. While the confidence indicators signal slightly sagging momentum, industrial growth should remain strong in the second half as well. In view of the high ratio of new orders to inventories, the inventory cycle, too, should provide growth impulses in the next few months.

In the wake of vigorous export and industrial activity, the contractionary phase of the investment cycle also came to an end in the second quarter of 2010. During that quarter, gross capital investment growth became positive again

Table 2

Real Economic Growth and Demand Components

	GDP	Private consumption	Government consumption	Gross fixed capital formation	Exports	Imports
	Change on previous period in %					
Q1 08	1.3	0.2	−0.7	2.5	1.4	−0.6
Q2 08	0.4	0.2	2.8	1.2	−1.0	0.0
Q3 08	−0.6	0.2	−0.8	−1.8	−3.8	−3.2
Q4 08	−1.5	0.3	1.5	−3.2	−6.3	−4.8
Q1 09	−2.3	0.3	−1.6	−4.4	−6.5	−5.8
Q2 09	−0.8	0.4	0.2	−1.8	−3.2	−2.7
Q3 09	0.6	0.3	1.3	−0.3	1.7	1.0
Q4 09	0.4	0.2	−0.5	−1.2	2.1	0.8
Q1 10	0.0	0.2	0.2	−2.0	1.0	1.4
Q2 10	**1.2**	**0.2**	**0.2**	**0.5**	**5.0**	**3.4**
2006	3.5	1.8	2.5	0.9	7.9	5.5
2007	3.7	0.9	2.4	3.5	8.5	6.5
2008	1.9	0.7	3.7	2.8	−0.4	−1.7
2009	−3.8	1.1	0.5	−8.9	−13.9	−11.9

Source: Eurostat.

(+0.5%), bolstered by investment in plant and equipment (+3.6%). As manufacturing companies have been reporting above-average capacity utilization levels once again, and as machine imports have recently risen sharply, companies are likely to keep expanding their plant and equipment spending in the second half of the year. However, construction investment posted a disappointing performance. Investment in residential construction (–1.3%) and civil engineering construction (–2.4%) both continued to contract in the second quarter of 2010. The falling number of construction permits indicates that this trend is unlikely to reverse in the near future, at least not in the case of residential construction.

Consumer spending emerged as a stabilizing demand component during the crisis, albeit at a fairly low level. In recent quarters, households upped spending by only 0.2% quarter on quarter in real terms. In the next few months, consumer spending could accelerate slightly. Most recently, real retail sales augmented quite dynamically; new car sales also increased noticeably from mid-2010, after having plummeted when the car scrapping incentive expired. Furthermore, payroll employment has been making gains again since February 2010. Overall, however, with real wages posting only subdued growth, private consumption cannot be expected to stimulate activity at an above-average rate.

Real economic growth is forecast to come to roughly 2% for the whole year 2010, with the pace of growth slowing toward the end of the year. Animated export demand will remain the key impetus to growth. Considering the strength of the recession, the current upturn is fairly restrained, and domestic demand is still too weak for a self-sustained upswing. As growth is heavily dependent on exports, uncertainties surrounding external developments pose the biggest risk to the further course of economic activity in Austria. Factors that could dampen growth in Austria are, among others, a deterioration of the debt crises, a worsening of the U.S. economy or the prospect of economic overheating in China and its repercussions.

Results of the OeNB Economic Indicator of October 2010

After an exceptionally powerful economic revival mid-2010, the OeNB expects continued robust economic activity in the second half of 2010. Growth is set to stay above the long-term average in the third and fourth quarters of 2010 and to weaken somewhat toward the end of the year. The OeNB's latest economic indicator results put real GDP growth at 0.9% in the third and 0.6% in the fourth quarter of 2010 (seasonally and working day-adjusted, on a quarterly basis). This should bring economic growth to just under 2% for the whole year. Compared to the previous results of the economic indicator, which were published in June 2010, the growth forecast for the third quarter of 2010 was raised slightly by 0.2 percentage points.

Short-Term Outlook for Austria's Real GDP in the Third and Fourth Quarters of 2010 (seasonally and working-day adjusted)

2008				2009				2010			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Year-on-year quarterly change in %											
2.8	3.0	2.2	−0.4	−3.9	−5.1	−4.0	−2.1	0.2	2.3	**2.6**	**2.7**
Quarterly change in %											
1.3	0.4	−0.6	−1.5	−2.3	−0.8	0.6	0.4	0.0	1.2	**0.9**	**0.6**
Annual change in %											
1.9				−3.8				2.0			

Source: Results of the OeNB Economic Indicator of October 2010, Eurostat.

The next release of the OeNB's economic indicator is scheduled for January 2011.
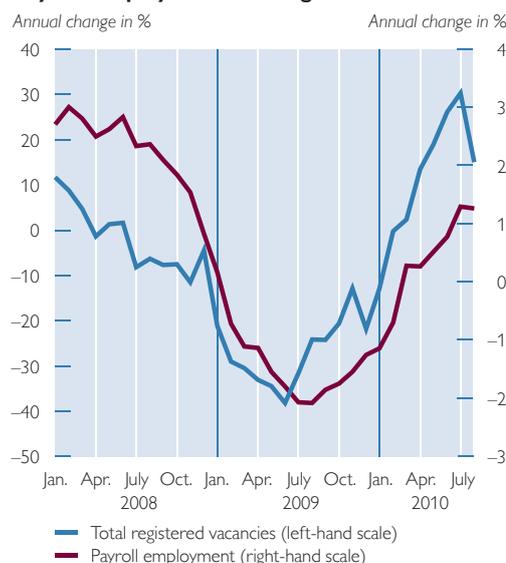
Chart 10

Austrian Labor Market Developments

Unemployment

Payroll Employment and Registered Vacancies

Source: Austrian Public Employment Service, Main Association of Austrian Social Security Institutions, Statistics Austria.

4.2 Labor Market Recovers

The situation in the Austrian labor market improved noticeably in the course of 2010. The unemployment rate (Eurostat definition) sank to 4.4% in the second quarter, and the seasonally adjusted jobless rate according to the national definition dropped to 6.8% in August 2010, the lowest value since the beginning of 2009. In the first quarter of 2010, payroll employment growth became positive again and topped out at 1.3% in August, a temporary high.

For the remainder of the year, the available leading indicators signal a continuation of the recovery on the labor market, albeit most likely at a somewhat weaker rate in the upcoming months. For instance, the development of unemployment among leased workers, which has led total unemployment by one quarter up to now, signals a further, if marginally slower decline in unemployment. Although the rise in registered vacancies has leveled off somewhat more recently, it remains strong enough to indicate a continuation of employment growth.

4.3 Inflation Remains Subdued

In August 2010, the year-on-year rate of HICP inflation in Austria diminished again slightly, dropping to 1.6% from 1.7% in the preceding month. Since the sharp uptick from February to March 2010, inflation has thus been on a slow downtrend in Austria. Core inflation (HICP excluding energy and unprocessed food) also edged down in August, coming to 1.1% most recently, which was mainly attributable to the development of the price of oil products.

The current inflation forecast of the OeNB stands at 1.6% for 2010 and 1.7% for 2011, with core inflation persisting at below 1.6% over the entire forecast horizon. In line with market expectations for the price of crude oil, the contribution of the energy component to inflation will recede slightly. By contrast, service inflation is expected to rise moderately owing to marginally higher wage inflation and the delayed transmission of various past energy price increases.

Chart 11

HICP Inflation and Contributions from Subcomponents

Contributions to growth in percentage points   *Final observations: August 2010*
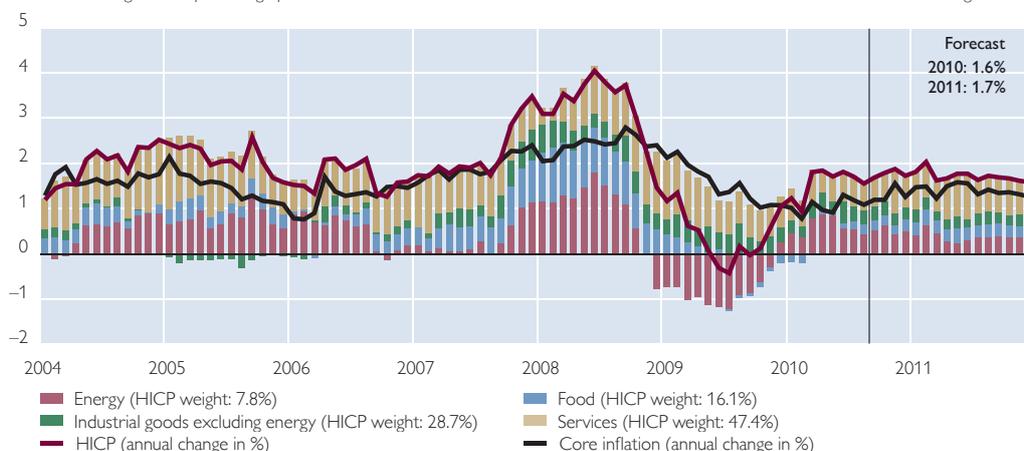
Source: OeNB, Statistics Austria.

The Austrian Labor Market and the Great Recession: Developments and Measures Taken

Alfred Stiglbauer[1]

As the international financial and economic crisis unfolded, labor market conditions in Austria started to deteriorate in mid-2008, marking the onset of one of the severest crisis episodes in the Austrian labor market since World War II. Its effects have been surprisingly small, however, considering the scale of the decline in real economic activity. The reason for this moderate impact was that total hours worked declined more sharply than headcount employment. The working hour reductions were much more substantial than can be explained by short-time work alone, though.

An international comparison shows country differences in the extent to which the decline in employment was based on reductions in headcount or hours worked per employee. Austria and Germany are among those countries in which hours worked declined most sharply, which made it possible to keep more people in employment. Even though labor market conditions in Austria have been improving over the past few months, unemployment figures and the number of participants in training programs by the Austrian Public Employment Service are still higher than they were before the crisis. Employment figures, too, have not yet returned to precrisis levels.

JEL classification: E24, J22, J48
Keywords: labor demand, recession, public policy

During the economic slump triggered by the international financial crisis, world economic activity declined in 2009 for the first time since the Great Depression of 1929 to 1933. Austria, too, recorded the deepest recession since World War II: Real GDP shrank by 3.9% in 2009; on a quarter-on-quarter basis, the decline was sharpest in the first quarter of 2010 (–2.1%). In light of the dramatic downturn, "Great Recession" seems an entirely appropriate term; nevertheless, we will mainly refer to it as "the crisis" in this study.

The Austrian labor market responded rather quickly to the economic downturn. This paper highlights the impact of the recession on the labor market from various perspectives: It focuses, in particular, on (recent) developments in employment and unemployment as well as on changes in working hours, and features an international comparison.[2]

This study is structured as follows: Section 1 describes the labor market situation at the height of the crisis in the second quarter of 2009 and in early summer, illustrating by how much employment declined and joblessness increased. A comparison with earlier episodes shows that this crisis, albeit severe, has not been the deepest crisis the Austrian labor market has experienced since World War II, even though during the current crisis, growth slumped to the lowest level since the Great Depression of the 1930s. Section 2

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Consumer Protection

discusses the reasons why the labor market impact was relatively moderate in relation to the extent of the downturn. Among these reasons are Austria's active labor market policy, e.g. training programs by the Austrian Public Employment Service (Arbeitsmarktservice Österreich – AMS) and short-time working arrangements, but also the fact that working hour reductions have been substantial in general. Section 3 adds an international perspective. The impact of the crisis on national labor markets across the EU has been highly heterogeneous, which is attributable to two main factors: First, the downturn was more dramatic in some countries than in others, and second, there were differences across countries in the share of headcount and working hour reductions. Section 4 shows that labor market conditions in Austria have improved from mid-2009 but that employment and unemployment figures have by far not reached precrisis levels. Section 5 summarizes and concludes.

1 Employment and Unemployment at the Height of the Crisis

1.1 Labor Market Situation Deteriorates Rapidly from Mid-2008

Signs of worsening labor market conditions increased from mid-2008, if not earlier. Leading indicators pointed to a steep decline in economic growth,

and short-term outlooks for economic activity, like the OeNB's economic indicator, had to be revised downward several times in succession. The right-hand panel of chart 1 shows actual economic developments based on national accounts data, which are published with a time lag. After dropping in the second quarter of 2008 against the previous quarter, real GDP growth plunged dramatically in the following quarters. The early warning system of the AMS also indicated an impending increase in unemployment: Planned layoffs rose on a year-on-year basis and surged in summer 2008 (left-hand panel of chart 1).[3] The rise in actual unemployment occurred with a lag of several months.

When the Austrian economy started to contract in the third quarter of 2008, labor market conditions were still good, but deteriorated markedly in the following quarter. The left-hand panel of chart 2 depicts the developments based on monthly data on employment, unemployment and job vacancies that are published by the Main Association of Austrian Social Security Institutions and the AMS at the end of each month. The chart covers the period from early 2008 up until the peak[4] of the labor market deterioration and, in line with common practice, shows year-on-year changes.

In the first half of 2008, employment was up by around 80,000, which

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[3] *According to the Austrian Labor Market Promotion Act (Arbeitsmarktförderungsgesetz), companies with more than 20 employees have to notify the AMS at least 30 days in advance before terminating employment contracts if the number of layoffs exceeds a certain threshold. Given that these notifications are subject to strong seasonal variation, we chose to depict year-on-year changes in chart 1. These values still contain considerable fluctuations due to seasonality and reporting behavior. Moreover, some companies report upcoming layoffs of the same employees over several consecutive months, and it is impossible to single out these instances in the data. This is why we smoothed the series by using moving three-month averages (centered).*

[4] *We made the simplifying assumption that the peak of the labor market crisis was in June 2009 to avoid confusion over a constantly changing observation window; not all data series are synchronous. The sharpest annual increase in unemployment was reported at the end of March 2009, whereas employment figures reached their lowest level at end-August 2009 and the seasonally adjusted unemployment rate (national definition) peaked in September 2009. Details of measurement can be found in the annex to this article.*

Chart 1

Indications of Worsening Labor Market Conditions

**AMS Early Warning System and
Actual Unemployment Developments**

Real GDP Developments

Annual change   *Annual change*

Unemployed persons (right-hand scale)
Announced layoffs (left-hand scale)

Source: AMS, OeNB.

Quarterly growth in %

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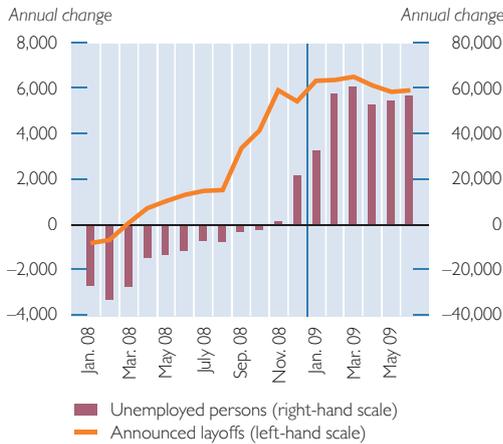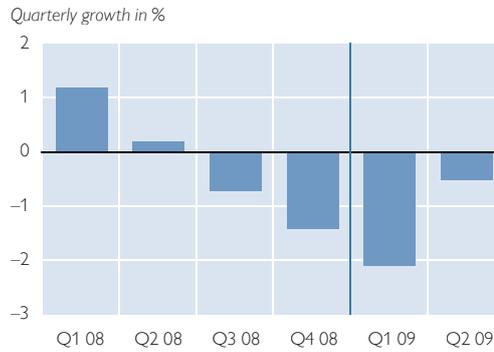
equals some 2.3% of payroll employment. Following a considerable slowdown in the third and fourth quarters of 2008, employment growth turned negative at the beginning of 2009. In June 2009, payroll employment shrank by around 60,000 compared to one month earlier (just under –1.9%).

Chart 2

Labor Market Conditions in Austria Deteriorate Rapidly from Mid-2008

Monthly Social Security and AMS Data

Quarterly LFS Data

Change on the same month of the previous year   *Change on the same month of the previous year*

Change on the same quarter of the previous year

Employment as recorded by the Main Association of
Austrian Social Security Institutions (left-hand scale)
Announced layoffs (left-hand scale)
Job vacancies (right-hand scale)

Total employment
Payroll employment
Unemployed persons
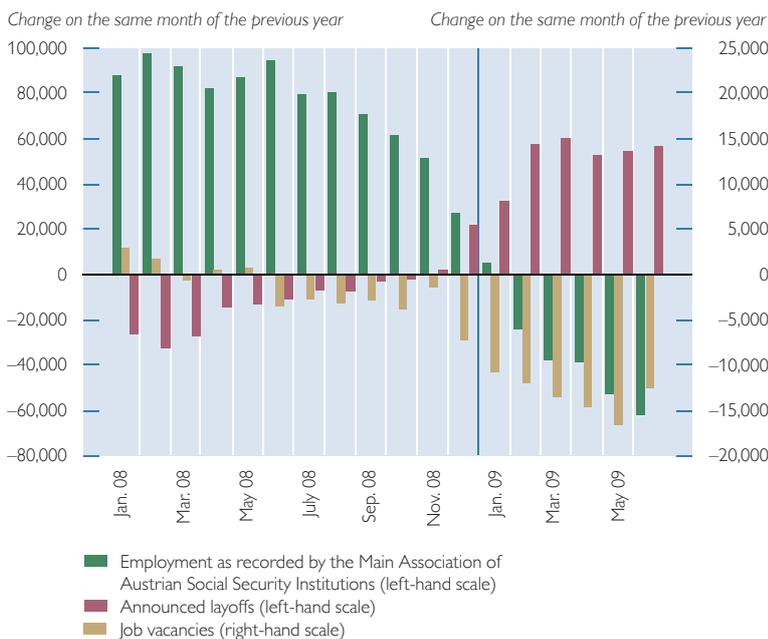
Source: Main Association of Austrian Social Security Institutions, AMS, Statistics Austria.

Growth in job vacancies was slightly negative during most of 2008 and contracted markedly in early 2009. Year-on-year unemployment figures increased from end-2008, rising by just under 60,000 in June 2009, which is in a similar range as the change in payroll employment.

The right-hand panel of chart 2 depicts the development based on micro census data from Eurostat's Labour Force Survey (LFS) for the period from early 2008 to the second quarter of 2009. Given considerable conceptual differences between national and Eurostat data[5], the figures vary sometimes but still illustrate similar developments in employment and unemployment.

1.2 Impact of the Crisis by Industries and Workforce Groups

Table 1 shows aggregated employment and unemployment figures and the development in selected industries from the beginning of the crisis in end-June 2008 to its peak at end-June 2009.[6] The LFS data in the table refer to the change between the second quarter of 2008 and the same quarter of 2009. Section 4 (table 4) presents a similar comparison, but for the period from end-June 2008 to end-June 2010, comparing the current situation with the precrisis situation.

The number of unemployed persons rose by 57,000 between June 2008 and June 2009, and the number of participants in AMS training programs increased by just under 16,000. The bulk of the increase in unemployment can be attributed to just a few industries. Manufacturing alone accounted for a rise in unemployment by 15,000 persons, with manufacturers of metal products, machinery and equipment as well as transport equipment being particularly affected. The increase in the number of unemployed was also substantial in the construction industry and the accommodation and food services industry, and above all in the wholesale and retail trade sector as well as the staff leasing industry (which hires out employees mostly to companies in manufacturing).

The sharp decline in employment in manufacturing (around –42,000) and in the staff leasing industry (–18,000) is especially conspicuous. In relative terms, employment fell the most among leased employees (–23%). Compared with permanent staff, this group earns less, receives fewer social benefits and runs a higher risk of losing their job (OECD, 2010). Taken together, employment in manufacturing and the staff leasing industry dropped roughly by the same proportion as in the rest of the economy. Reductions in employment were also pronounced in the construction industry and in retail and wholesale trade.

Despite the worsening in the labor market in general, several industries posted vigorous employment growth, such as the financial services industry (by just under 5,000) or education and the health and social work industry (by between 4,000 and 7,000).

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[5] One reason why the micro census data show a more favorable employment development than the national data lies in the fact that the former also covers marginal employment. According to the data provided by the Main Association of Austrian Social Security Institutions, growth in marginal employment declined but remained positive throughout the crisis; however, the AMS and social security (un)employment figures do not include marginal employment. The divergent development in payroll employment and overall employment (right-hand panel of chart 2) can be explained by the fact that self-employment declined more sharply in relative terms than payroll employment.

[6] Unemployed persons are assigned to the industry in which they were last employed.

According to the LFS, actual hours worked declined by 5.2% in Austria and thus considerably more strongly than headcount employment (–1.8%). In absolute terms, the two common measures of unemployment in Austria (i.e. the national rate, based on AMS and social security data, and the Eurostat rate) rose by 1.5 and 1.6 percentage points, respectively.

A detailed breakdown of the workforce groups affected by the crisis can be found in Mahringer (2009), Scheiblecker (2010), AMS (2010a) and BMASK (2010). Given their large share in manufacturing employees, men were hit harder by the crisis than women. Foreign workers felt the impact of the worsening labor market conditions earlier than domestic employees, but ultimately, this impact was not stronger (in relative terms). Among young employees, employment fell and unemployment rose more sharply than the respective rates in the prime working age and older age groups.

1.3 A Severe but by no Means Exceptional Crisis by Historical Standards

Unlike national accounts and LFS data, the monthly data series on payroll employment and unemployment in Austria as compiled by the Main Association of Austrian Social Security Institutions and the AMS (which are published

Table 1

Deterioration in the Austrian Labor Market until the Height of the Crisis

	Change from June 2008 to June 2009	
	Unemployment	Payroll employment
Austrian social security and AMS data		
Total, in absolute terms (number of persons or contracts[1])	56,945	−60,617
Total, in relative terms (%)	31.9	−1.8
Participants in AMS training programs	15,773	
Vacancies	−16,659	
Selected industries:	*Number of persons*	
Manufacturing	15,273	−42,614
Construction	4,467	−5,720
Wholesale and retail trade	8,056	−10,664
Accommodation and food services	5,123	−2,830
Staff leasing	7,528	−18,154
Financial services	256	4,880
Public administration and defence, compulsory social security	502	−3,358
Education	649	4,466
Health	229	5,740
Social work	1,568	7,052
Labour Force Survey data[2]		
Total figures, in absolute terms (number of persons)	53,000	0
Total figures, in relative terms (%)	36.4	0.0
Hours worked (quarterly, in %)	−5.2	
Unemployment rate	*Percentage points*	
National definition	1.5	
Eurostat definition	1.6	

Source: Austrian Federal Ministry of Labour (BMASK), Statistics Austria.

[1] *Payroll contracts excluding employees on parental leave.*
[2] *Change from Q2/2008 to Q2/2009.*

at the end of each month) goes back almost to the end of World War II. Therefore, we are able to compare the employment and unemployment effects of the most recent recession with those caused by earlier substantial labor market deteriorations.

The following criteria were applied in the selection of crisis episodes affecting the labor market: (1) Unemployment growth must reach at least 1% of total payroll employment, and (2) the sharpest decline in employment must be at least one-half of the rise in unemployment. While the first – admittedly somewhat arbitrary – criterion means that we focus on "significant" labor market crises only, the second criterion serves to select periods in which labor demand actually contracted. A case in point of a period that does not meet this requirement is the immigrant labor supply shock of the early 1990s, when a rise in unemployment coincided with a substantial increase in employment.

The time frame of labor market crises was also defined in a simple way: The first month in which unemployment figures increase on a year-on-year basis is the beginning of the crisis, and the first month in which the changes in unemployment turn negative (or close to zero) is the end.[7] The same definition is used for the employment data series. Chart 3 shows the data series on seven labor market crises in Austria since World War II.

Developments during Selected Labor Market Crises

Unemployment

Annual change

Employment

Annual change

Legend:
— February 1952 to October 1953
— November 1962 to November 1963
— January 1975 to April 1976
— October 1980 to April 1984
— July 1995 to November 1996
— May 2001 to April 2003
— November 2008 to March 2010

Source: AMS, Main Association of Austrian Social Security Institutions.

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[7] *This simple method of defining the beginning and end of a crisis distorts the temporal dimension, though (see annex). Moreover, AMS training programs for unemployed people are stepped up during a crisis, which dampens the impact on unemployment as recorded by the AMS, which in turn has an (albeit small) effect on the calculated duration of the labor market crisis. Figures on training program participation are not considered, as they are available only for the period since 1998.*

The left-hand panel of chart 3 (Unemployment) is almost a mirror image of the right-hand panel (Employment), but changes in employment are frequently larger than those in unemployment, which points to a decline in labor supply in times of crisis (see also section 1.4).

The chart shows that, compared to the other episodes, the latest labor market crisis was rather severe both in terms of its intensity (measured by the highest and lowest point) and its duration. Still, in the early 1950s, unemployment increased much more than it did now. While the rise in unemployment in the early 1980s and early 2000s was comparable to that observed in the latest crisis, it took longer in the earlier two episodes (and even substantially longer in the period from 1980 to 1984) before employment increased and unemployment declined again on a year-on-year basis.

Chart 3 also shows that unemployment rose very steeply in the 2008–10 crisis, surging within just a few months, but abating almost as quickly when the crisis subsided. According to our definition, the current crisis lasted 16 months, from November 2008 to March 2010.[8]

All seven episodes are dwarfed by the Great Recession of the 1930s. While unemployment figures initially rose by 75,000 between 1929 and 1930 (and thus by not much more than in 2008–09), they increased by a hefty 315,000 (i.e. total unemployment roughly doubled) until 1933. The unemployment rate climbed above 27%[9] and declined only slightly over the following years (Mitchell, 2000).

1.4 Effects on Employment and Joblessness Remain Modest

While the changes in unemployment and employment have been substantial in the current labor market crisis, they have been surprisingly moderate in relation to the dramatic real economic downturn and the severe recession.

What would have been the outcome if employment and joblessness had reacted to fluctuations in economic activity like they used to in the past? In chart 4, we attempt to provide a simple answer based on annual data. The scatter plot in the left-hand panel shows GDP growth and changes in the unemployment rate (national definition) for the period from 1985 to 2007. The average relationship of the two variables is also called Okun's law. A simple regression line through the data points yields an Okun coefficient of −4. This means that, on average, a rise in GDP growth by 1% dampens the increase in the unemployment rate by 0.25 percentage points. Real GDP growth would have to be at least 2.5% for the unemployment rate to drop. Chart 4 shows the actual data point for 2009 and the point marked in the regression line that results from the average relationship given the same annual GDP contraction (−3.9%). According to Okun's law, the unemployment rate would have had to rise slightly more than it did, but the difference is just under 0.3 percentage points.

There are good reasons for not focusing on the unemployment rate, though: Unemployment tends to react only to a certain extent to business cycle fluctuations. This is because labor supply, too, typically declines in a re-

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[8] Just like at the onset of the crisis, the AMS early warning system again indicated in advance that unemployment would recede.

[9] Austria's population and labor supply were much smaller then than they are today.

cession, as some people withdraw from the labor market, discouraged by bleak job prospects, while others are not counted in unemployment figures because they participate in AMS training programs.[10] Both groups are no longer registered as employed or unemployed and thus have no impact on labor supply figures.

This suggests that employment figures should be used for assessing the responsiveness of the labor market to GDP developments (see Möller, 2010, for Germany). The right-hand panel of chart 4 shows the relationship of the cyclical components[11] of payroll employment (based on national accounts data) and real GDP growth. The employment data series represents estimated values that are obtained by regressing cyclical employment on contemporary and one-year lagged cyclical GDP growth for the period from 1985 to 2009.

The two series follow roughly the same patterns, but employment growth fluctuates less than GDP growth. Even when we take this into account, the chart suggests that the reaction of employment in 2009 was weaker than could be expected in light of the downturn. In the following, we will show that this can be attributed to the substantial decline in average hours worked per employee in Austria, which made it possible to keep a relatively large number of people in employment.

2 Reasons for the Relatively Moderate Worsening of the Labor Market

Economic policy measures have contributed substantially to mitigating the effects of the crisis on the labor market. In 2009, Austria adopted two labor market packages, which included many measures with a direct impact on the labor market. In addition, the two

Chart 4

Expected and Actual Developments

Okun's Law 1985 to 2007

Change in the unemployment rate (national definition) in percentage points

Real GDP growth in %

— Average relationship 1985 to 2007

Employment and GDP Growth

%

— Cyclical component of GDP growth
— Estimated cyclical component of employment growth

Source: OeNB, author's calculations.
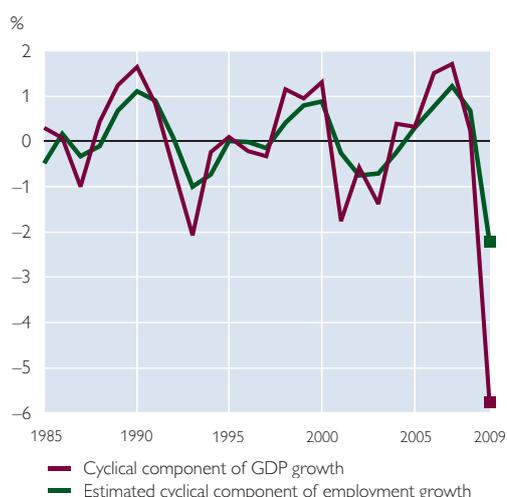
[10] *AMS training measures have, in fact, been extended substantially (section 2).*

[11] *The cyclical components are isolated by subtracting actual employment growth from trend growth, which is obtained by applying a Hodrick-Prescott filter ($\lambda=100$) to the series from 1985 to 2009.*

general economic stimulus packages and the last tax reform had an indirect impact, and the funds allocated to the AMS for active labor market measures were increased by 27% to more than EUR 1.1 billion. Table 2 shows that in 2009, spending on active labor market measures increased by a larger margin in relative terms than expenditure for passive measures (unemployment benefits and social assistance).

The labor market packages include above all consulting, training and employment measures for youth and young adults. Another element is the subsidized wage scheme for companies that hire people reentering the workforce, older employees or people with special needs ("Kombilohn Neu"). Other subsidized wage schemes are the "Aktion 4000" campaign, which creates employment opportunities in the public and nonprofit sectors for the long-term unemployed (or those in danger of becoming long-term unemployed), and the "Aktion +6000" initiative, which benefits youth with limited employment chances. In addition, the government changed the provisions on phased retirement, making it easier for older employees to reduce working hours before retirement. The packages are

rounded off by a number of qualification measures (the introduction of an AMS-financed bonus for participants in training programs, easier access to study leave, special training courses for migrants, qualification initiative in the health and social services sector). Finally, the number of people who received study leave benefits also rose sharply during the crisis; in the first half of 2010, it was up by around 70%[12] (or just under 3,000 in absolute figures) compared with the first half of 2009.

A detailed overview of the labor market measures taken in Austria can be found in BMWFJ (2010). A much-discussed measure, the short-time working subsidy, will be presented in greater detail in section 2.2.

2.1 AMS Training and Education Measures

Training and further education measures account for a large share of active labor market policy in Austria and are reflected in the number of participants in AMS training programs, which (like unemployment figures) are published by the AMS on a monthly basis. As mentioned earlier, the number of training participants rose by around 16,700 between June 2008 and June 2009

Table 2

Expenditure on Labor Market Measures in Austria

	2009	2008	Change
	EUR million		%
Active measures (e.g. qualification measures, including short-time work)	1,119.51	882.24	31.4
Passive and activating measures (e.g. unemployment benefits)	4,147.33	3,411.16	21.6
Total	5,266.84	4,293.40	23.6

Source: AMS (2010b).

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[12] *Preliminary figure provided by the Austrian Federal Ministry of Labour, Social Affairs and Consumer Protection (BMASK).*

(table 1). Chart 5 (left-hand panel) shows that this was a strong increase from an already high level. Based on annual averages, the number of training participants rose steadily between 1998 and 2009 (except in 2007 and 2008), more than tripling from 20,000 to above 60,000. This rise is, in principle, positive – both the European Commission and the OECD have for years promoted the use of these (and other) tools of active labor market policy. Given the large funds involved and the broad range of programs and courses available, however, evaluations are in order.[13]

2.2 Short-Time Work Surged during the Current Crisis Compared with the Last Economic Downturn

Short-time work has probably been the most prominent tool of active labor market policy during the crisis. It is an arrangement that allows companies experiencing a sales crisis to reduce the working hours[14] of their employees, who are compensated for part of their loss in earnings by the AMS in an amount based on notional unemployment benefits. The two labor market packages included the extension of the duration of the short-time working

Chart 5

Active Labor Market Policy in Austria – Key Measures

AMS Training Programs and Short-Time Work from 1998 to 2009

Number of people (left) / Number of people (right)

- Training participants aged 55+ (left-hand scale)
- Training participants aged 25 to 54 (left-hand scale)
- Training participants aged 15 to 24 (left-hand scale)
- People registered for short-time work (right-hand scale)

Short-Time Work during the Crisis

Number of people

- People actually on short-time work
- People registered for short-time work
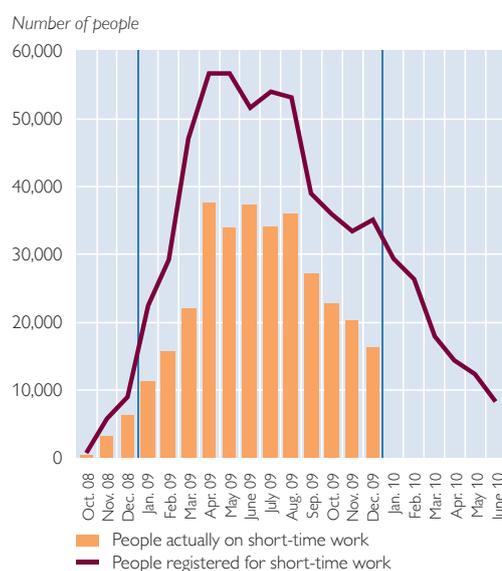
Source: AMS, Austrian Federal Ministry of Labour, Social Affairs and Consumer Protection (BMASK).

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[13] According to an analysis by Lutz and Mahringer (2007), subject-specific qualification measures have considerably larger employment effects than measures that support people in their job search and in taking up work (e.g. career orientation or job application training courses). The practice of making unemployed people attend the same course several times has also been debated. In an interview with the daily newspaper Der Standard, for instance, the Austrian Minister of Labour, Social Affairs and Consumer Protection, Rudolf Hundstorfer, declared that in future, people should not be required to attend one and the same job application training three times (Der Standard, May 25, 2010).

[14] The reduction in working time can be between 10% and 90%.

subsidy to up to 24 months. The number of short-time work arrangements deemed eligible by the AMS came to above 40,000 on average in 2009, which is about eight times higher than the figure recorded during the crisis of 2001–02 (left-hand panel of chart 5).[15] A breakdown by industries shows that above all the automotive and automotive supply industry as well as the machinery industry – industries where output declined particularly sharply – made use of this option. The total costs of this labor market measure ran to EUR 114 million in 2009.

The number of people registered for short-time work peaked in spring and summer 2009, coming to almost 57,000 in April 2009 (right-hand panel of chart 5). This figure declined steadily and quickly from August 2009 to reach just around 8,000 by June 2010.

The number of employees that were actually put on short-time work was considerably smaller, though, peaking, also in April, at almost 38,000 (right-hand panel of chart 5).[16]

On average, around 26,000 short-time working arrangements were actually subsidized in 2009, with an average reduction in working hours of around 26% (BMWFJ, 2010). This information allows us to make a rough estimate of the employment effects of short-time work. Assuming that 26% of these 26,000 employees would have lost their jobs if short-time work had not been introduced, the employment effect would come to just under 6,800 or 0.2% of payroll employment. While the calculation itself is not without problems

(see section 3.3), the result clearly shows that short-time work alone cannot have prevented employment from declining more sharply than it did.

2.3 Decline in Hours Worked

Another reason for the comparatively moderate effects of the crisis on employment and joblessness was the reduction in total hours worked, which dropped by 5.2%[17] – that is, by much more than employment (–1.8%) – between the second quarter of 2008 and the same quarter one year later (table 1).

This significant decline in the number of hours worked was attributable to two factors: First, capacity utilization in the Austrian economy had been high and people had worked many overtime hours before the crisis. Reducing hours was therefore an obvious measure. Second, regular working hours per week also declined in the wake of the crisis. According to an evaluation of LFS data (OECD, 2010), just under 45% of the reduction in hours worked per employee in Austria was due to a decline in overtime hours, while the remaining more than 55% was achieved through a reduction in regular working hours. How much did short-time work contribute to this decline? Based on the number of employees actually put on short-time work (26,000) and the associated average decline in working hours by 26%, an evaluation of LFS data shows that the contribution of short-time work to the total reduction in hours worked (–5.2%) was just 0.26 percentage points.

[15] *Pre-2001 figures on short-time work are not available.*

[16] *No final data are available for 2010, as the final settlements are made with considerable delay.*

[17] *According to seasonally adjusted national accounts data, the total number of hours worked fell by just 1.2%, which does not seem plausible. The international comparisons in OECD (2010) and European Commission (2009), too, are based on LFS data on hours worked.*

3 An International Comparison

How severe was the deterioration of the Austrian labor market by international standards?[18] The effects of the crisis have been highly heterogeneous across national labor markets, which can be ascribed to two main factors: First, some countries were hit harder than others by the macroeconomic shock (measured by the decline in real GDP), and second, the employment response differed across countries regarding the extent to which it was based on a reduction in headcount or working hours.

3.1 Substantial Country Differences in the Size of the Macroeconomic Shock and the Employment Response

Chart 6 shows a scatter plot of changes in real GDP and employment for all EU Member States, the EU aggregate,

the euro area and the U.S.A. Employment dropped in all countries but Poland. The decline was especially pronounced in the Baltic countries, which also posted a more dramatic slowdown in GDP growth than the other countries. In some countries, like Ireland, Spain and the U.S.A., employment dropped relatively sharply measured by the average relationship between growth and employment (regression line), while the reaction of employment was rather weak in other countries (e.g. Germany and Austria).

3.2 Headcount or Working Hour Reductions?

To make the differences in response patterns better visible and to abstract from the size and composition of the macroeconomic shock, chart 7 shows the elasticity of employment and work-

Chart 6

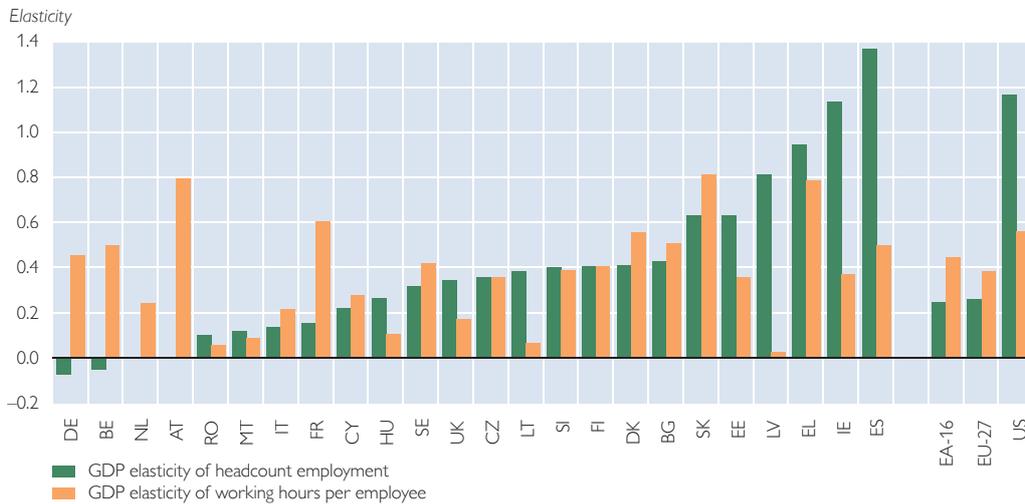**GDP and Employment Growth in the Wake of the Crisis (Q2/2008 to Q2/2009)**

Source: Eurostat, Bureau of Labor Statistics (BLS), Bureau of Economic Analysis (BEA).
Note: EA-16 stands for the 16 euro area countries.

[18] See OECD (2009, 2010), European Commission (2009), Verick and Islam (2010) or Eichhorst et al. (2010) for detailed discussions of labor market developments during the crisis.

Chart 7

Employment Response: Reductions in Headcount or in Working Hours per Employee?

Elasticity

Source: Eurostat, Bureau of Labor Statistics (BLS), Bureau of Economic Analysis (BEA), author's calculations.

Note: The three member states with a negative elasticity of working hours (Luxembourg, Poland and Portugal) are not included in this chart. EA-16 stands for the 16 euro area countries.

ing hours[19] in relation to the decline in real GDP during the crisis for the same countries, which are sorted in ascending order of employment elasticity.

While the reaction of working hours per employee was rather similar in the U.S.A. and the EU (and the euro area), the number of layoffs in relation to the size of the downturn was much higher in the United States. Employment dropped significantly in some European countries, too, above all in Spain, Ireland and Greece, whereas in other EU countries, like Germany, Belgium, Austria and France, the number of layoffs was very small and the necessary adjustments were achieved through sharp reductions in the number of working hours. In still other countries, e.g. the Czech Republic, Sweden, Slovenia and Finland, the elasticity of employment and of working hours was in a similar range. The combination of a low elasticity of employ-

ment and a high elasticity of working hours usually means that the productivity per employee drops, but it does not necessarily imply a decline in the productivity per hour (see OECD, 2010).

How can we explain the stark differences in response patterns? One plausible reason is that in several countries (in particular Spain, Ireland and the U.S.A.), speculative real estate bubbles burst as the financial crisis hit, which led to a slump in the construction industry. The precrisis share of the construction industry in total employment is, in fact, negatively correlated with the change in total employment during the crisis (European Commission, 2009). These developments can be assumed to be structural changes in the respective economies, so that employment in construction will likely not return to precrisis levels. This explains the drastic decline in employment in this industry.

[19] *EU Member States: Hours worked per employee in principal job.*

Another factor is that several countries, e.g. Germany and Austria, faced shrinking exports during the crisis, but the affected companies tended to keep their highly qualified employees, assuming that the crisis would only be temporary (Möller, 2010; OECD, 2010; The Economist, 2010).

In addition, there may be country-specific differences in companies' willingness to keep people employed, and this willingness may also change over time. Since the 1970s, U.S. companies have increasingly laid off staff instead of reducing working hour in response to declining labor demand (OECD, 2010). Hallock (2009) identifies a fraying of the implicit employment contract, which involves expectations about employers' and employees' loyalty toward each other, for instance as regards the avoidance of layoffs. This may also have contributed to the differences in employment reactions in the U.S.A. and in Europe. In those European countries that posted substantial declines in employment, leased staff (to whom this implicit contract does not extend) were affected the most, as the example of Spain shows.

3.3 The Effects of Short-Time Work – An International Comparison

Many countries relied on short-time work during the crisis, either by adapting existing arrangements (e.g. by extending maximum periods) or by introducing such schemes (OECD, 2010). Measured in terms of total employment, short-time work was used more widely in Germany than in Austria. Based on a calculation analogous to that used in section 2.3 for Austria, the employment effect in Germany would be 350,000 or around 1% of total payroll employment. In this case, too, short-time work can only partly explain the moderate reaction of employment figures. More important were (1) the fact that companies voluntarily reduced working hours per employee and (2) the flexibility of working hours through working time accounts, as foreseen in many collective agreement contracts (Möller, 2010).

The figures obtained in such simple calculations of the effects of short-time work (as those mentioned for Austria and Germany) probably reflect the upper limit of the actual impact. For one thing, the subsidies may lead to deadweight effects (i.e. companies would not have cut these jobs anyway), and for another thing, it is possible that companies cut the jobs once the subsidies expire. To assess the impact of short-time work accurately, we would have to know the counterfactual outcome, that is, the change in employment without short-time work, which, obviously, can only be estimated. An attempt at estimating the counterfactual development to gauge the permanent effects of short-time work on employment was made in OECD (2010) based on a panel-econometric analysis of 19 EU Member States.

Table 3

Estimated Permanent Effects of Short-Time Work on Employment

	%	1,000 persons
Portugal	0.01	0.4
Denmark	0.06	1.5
France	0.09	18.1
Netherlands	0.09	5.6
Hungary	0.09	3.0
Austria	0.12	4.0
Spain	0.24	30.3
Czech Republic	0.43	17.3
Germany	0.73	221.5
Italy	0.74	124.0
Finland	0.78	15.3
Belgium	1.27	43.3

Source: OECD (2010).

The results are shown in table 3. In a number of countries, short-time work contributed significantly to safeguarding employment (above all in Germany, Italy and Finland). The effect was most pronounced in Belgium at around 1.3% of total employment. At 0.12%, the results for Austria were somewhat smaller than those obtained in the rough estimation presented in section 2.3 (0.2%).

4 Visible Labor Market Recovery

Labor market conditions in Austria have improved markedly since mid-2009. Chart 8 shows two seasonally adjusted unemployment rates for Austria (Eurostat and national definition). Both rates rose until mid-2009 and have been falling since, with the Eurostat rate declining much more strongly than the AMS rate. The chart also illustrates that the unemployment rate in the euro area stabilized at 10% but has not dropped yet on average.

4.1 Unemployment still Above, Employment still Below Precrisis Levels

To establish whether employment and joblessness have returned to precrisis levels, table 4 compares Austrian labor market data from end-June 2008 (the first quarter of 2008) with data from end-June 2010 (the first quarter of 2010).

While the situation has improved from June 2009, unemployment was still 40,000 above and employment almost 20,000 below the mid-2008 level. The number of AMS training participants was also 25,000 higher than the precrisis level. Moreover, AMS data show that the labor market support measures taken in addition to short-time working subsidies generally continued at a higher level than before the crisis. Further, the LFS results suggest that the total number of hours worked increased from 2009, but still remained 2.1% below the precrisis level.

Chart 8

Seasonally Adjusted Unemployment Rates from June 2008 to June 2010
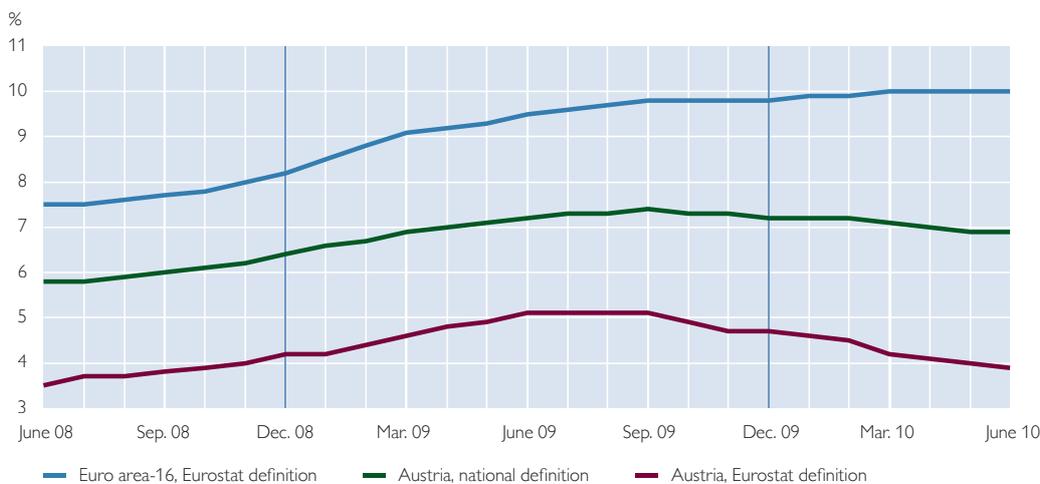
Source: OeNB.

4.2 No Improvement in Manufacturing but More Jobs in the Public, Education, Health and Social Services Sectors

Looking at individual industries, it turns out that manufacturing employment has not improved at all: Job figures in this sector are 45,000 below the June 2008 level. A comparison with table 1 shows that the situation even deteriorated slightly from mid-2009. Construction employment showed no improvement from 2009, either.

A rise in employment from June 2009 was observed in wholesale and retail trade and above all in the staff leasing industry, which points to un-

certainty regarding the sustainability of the recovery. Apparently, companies are hesitant to hire permanent staff. However, this could also be a lasting effect, with companies in the manufacturing industry permanently replacing part of their core staff with leased employees.

Compared with 2008 and 2009 figures, employment improved in the public sector as well as the education, health and social services sectors. On the one hand, this rise has to do with increased demand for childcare employees (free access to kindergarten was introduced in several Austrian provinces, and one year of mandatory

Table 4

Current Situation in the Austrian Labor Market Compared with the Precrisis Situation

	Change from June 2008 to June 2010	
	Unemployment	Payroll employment
Austrian social security and AMS data[1]		
Total figures, in absolute terms (number of people or contracts[2])	40,095	−19,505
Total figures, in relative terms (%)	23.2	−0.6
Participants in AMS training programs	25,398	
Vacancies	−9,617	
Selected industries:	*Number of people*	
Manufacturing	5,811	−45,222
Construction	3,092	−6,742
Wholesale and retail trade	6,789	−7,564
Accommodation and food services	4,626	−4,944
Staff leasing	3,491	−7,364
Financial services	139	4,789
Public administration and defence, compulsory social security	874	8,049
Education	1,099	11,715
Health	454	6,548
Social work	2,468	10,266
Labour Force Survey data[3]		
Total figures, in absolute terms (number of persons)	1,700	−14,300
Total figures, in relative terms (%)	1.0	−0.4
Hours worked (quarterly, in %)	−2.1	
Unemployment rate	*Percentage points*	
National definition	1.0	
Eurostat definition	0.4	

Source: Austrian Federal Ministry of Labour (BMASK), Statistics Austria.

[1] *Change from May 2008 to May 2010 for employment data (owing to a reclassification).*
[2] *Payroll contracts excluding people on parental leave.*
[3] *Change from Q1/2008 to Q1/2010.*

preschool education was introduced throughout Austria). On the other hand, it probably reflects the effects of several AMS labor market programs (section 2).

4.3 Eurostat Unemployment Rate for Austria Plunged

At 3.9% as of end-June 2010, the Eurostat unemployment rate was just 0.4 percentage points higher than the June 2008 level (chart 8 and table 4). This seems somewhat surprising in light of the above-described conditions in the Austrian labor market. One caveat is that the data for April, May and June 2010 are preliminary and will be revised once the LFS results for the second quarter of 2010 become available. Then the Eurostat rate will again be adjusted for seasonality. The next revision of the Eurostat rate might result in a somewhat higher rate for Austria, but this should not change the fact that Austria currently has the lowest unemployment rate in the EU.

5 Summary and Conclusions

Labor market conditions in Austria started to deteriorate from mid-2008 during the international financial and economic crisis. Employment declined by some 60,000 until mid-2009, and joblessness increased by more than 50,000 year on year, in particular in manufacturing, construction, accommodation and food services as well as staff leasing.

In terms of its duration and its quantitative effects on employment and unemployment, this episode has been one of the severest crises since World War II. In relation to the decline in real GDP, however, the impact has been surprisingly moderate, which was attributable to a sharp decline in total hours worked that was more substantial than the decline in headcount employment.

The stabilization of the Austrian labor market can be ascribed, among other things, to the massive use of active labor market measures, with the extension of the short-time working subsidy receiving the most public attention. The actual working hour reductions were much more substantial than can be explained by short-time work, though.

An international comparison shows considerable heterogeneity in the degree to which national labor markets deteriorated. This has to do with differences in the size of the macroeconomic shock on the one hand, and on the other hand with differences in the extent to which the decline in employment was based on headcount or on hours worked per employee. Austria and Germany are among those countries in which hours worked per employee declined the most, which made it possible to keep more people in employment. Another factor was probably companies' assessment of the extent to which the crisis would have structural implications in the respective countries.

Labor market conditions in Austria have been improving over the past few months, but unemployment figures and the number of AMS training participants are still markedly higher than they were before the crisis. Also, total employment is still below the precrisis level, especially in the manufacturing industry. Employment has risen sharply in the public sector and in the education, health and social services sectors.

References

AMS. 2010a. Arbeitsmarktlage 2009. Vienna. June.

AMS. 2010b. Annual Report. Vienna. June.

BMASK (Austrian Federal Ministry of Labour, Social Affairs and Consumer Protection). 2010. Der Arbeitsmarkt im Jahr 2009. Vienna. Undated.

BMWFJ (Austrian Federal Ministry of Economy, Family and Youth). 2010. Wirtschafts-bericht Österreich 2010. Beschäftigungspolitik. Section 4.9. Vienna. July.

Der Standard. 2010. Hundstorfer will bei AMS-Kursen sparen. May 25.

Eichhorst, W., M. Feil and P. Marx. 2010. Crisis, What Crisis? Patterns of Adaption in European Labour Markets. IZA Discussion Paper 5045. July.

European Commission. 2009. EU Labour Markets in Time of Economic Crisis. Employment in Europe 2009. Chapter 1. Directorate General Employment, Social Affairs and Equal Opportunities. November.

Hallock, K. F. 2009. Job Loss and the Fraying of the Implicit Employment Contract. In: Journal of Economic Perspectives 23(4). 69–93.

Lutz, H. and H. Mahringer. 2007. Wirkt die Arbeitsmarktförderung in Österreich? Überblick über Ergebnisse einer Evaluierung der Instrumente der Arbeitsmarktförderung in Österreich. In: WIFO-Monatsberichte 3. 199–218.

Mahringer, H. 2009. Der Arbeitsmarkt in der Finanzmarkt- und Wirtschaftskrise. In: WIFO-Monatsberichte 12. 967–978.

Mitchell, B. R. 2000. International Historical Statistics. Fourth edition. Palgrave Macmillan.

Möller, J. 2010. The German Labor Market Response in the World Recession – De-Mystifying a Miracle. In: Journal for Labour Market Research 42. 325–336.

OECD. 2009. The Jobs Crisis: What Are the Implications for Employment and Social Policy? In: Employment Outlook. Chapter 1. Paris.

OECD. 2010. Moving Beyond the Jobs Crisis. In: Employment Outlook. Chapter 1. Paris.

Ragacs, C. and K. Vondra. 2009. Economic Crisis Unleashes Deep Recession in Austria – Stabilization Expected at Year-End. Economic Outlook for Austria from 2009 to 2011 (June 2009). In: Monetary Policy & the Economy Q2/09. OeNB. 6–42.

Ragacs, C. and K. Vondra. 2010. Subdued Economic Recovery given Necessary Fiscal Consolidation. Economic Outlook for Austria from 2010 to 2012 (June 2010). In: Monetary Policy & the Economy Q2/10. OeNB. 6–33.

Scheiblecker, M. 2010. Österreichs Wirtschaft im Jahr 2009: Schwerste Krise seit über 60 Jahren. In: WIFO-Monatsberichte 4. 321–388.

The Economist. 2010. Hoard Instinct. Economics Focus. July 10.

Verick, S. and I. Islam. 2010. The Great Recession of 2008–2009: Causes, Consequences and Policy Responses. IZA Discussion Paper 4934. May.

Annex
Notes on the Dynamics of Seasonal Labor Market Time Series

Most monthly (or quarterly) time series we used to describe general developments in the Austrian labor market show seasonal fluctuations with significantly larger amplitudes than the fluctuations of the business cycle. This applies e.g. to total employment and unemployment figures as well as the unemployment rate. The first panel in chart 9 shows non-seasonally adjusted data on the change of the monthly unemployment rate according to the national definition, which is calculated using payroll employment as reported by the Main Association of Austrian Social Security Institutions and AMS-registered unemployment, for the period from January 2007 to June 2010.

The chart reveals the pronounced seasonal pattern of unemployment: The graph peaks toward the turn of each year and reaches a trough around the middle of each year, with the average difference between peak and trough coming to almost 3 percentage points each year. The impact of the economic downturn is difficult to discern from this chart, and the exact timing of the labor market crisis cannot be determined. While it is clear that unemployment peaked in January 2010, it is impossible to distinguish between seasonal and cyclical (crisis-related) effects.

It is customary in Austrian labor market statistics to eliminate seasonality from the time series by calculating year-on-year changes for each month. The result is shown in the second panel of chart 9 (Annual Change). Now it is possible to identify distinct phases: After declining until November 2008, unemployment increased until February 2010 (with the strongest rise being recorded in March 2009) and dropped again from March 2010 on a year-on-year basis.

Does this help in determining the exact timing of the labor market crisis and its peak? The third panel of chart 9 (Seasonally Adjusted Data) illustrates that a graph based on annual changes, too, can be misleading in establishing the timing of the crisis in the labor market. The graph – like the one in the first panel – shows monthly data, but this time, the data have been adjusted for seasonality.[20] The chart shows that the unemployment rate started to rise already in spring 2008 and peaked in September 2009.

Using seasonally adjusted data is certainly advantageous in several respects. However, no official seasonally adjusted time series[21] are available for Austria – unlike in the U.S.A., where such data are provided by the Bureau of Labor Statistics (BLS). This means that each institution would produce its own data series, which would inevitably lead to confusion, because there are different seasonal adjustment methods, and economic statisticians have to select several parameters themselves for each method.

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[20] *The time series was obtained from the Austrian Institute of Economic Research, WIFO (adjustment method: Census X12).*

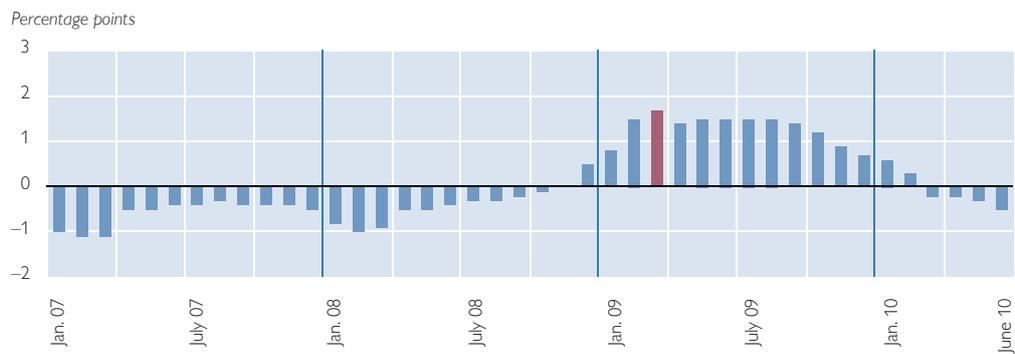[21] *The only exception is the Eurostat unemployment rate, which is published by Statistics Austria for the purpose of international comparisons.*

Chart 9

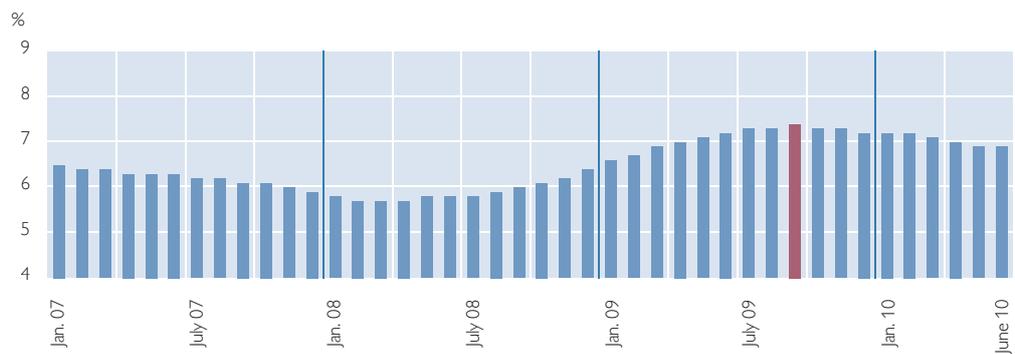## Unemployment Rate, National Definition (January 2007 to June 2010)

Non-Seasonally Adjusted Data

Annual Change

Percentage points
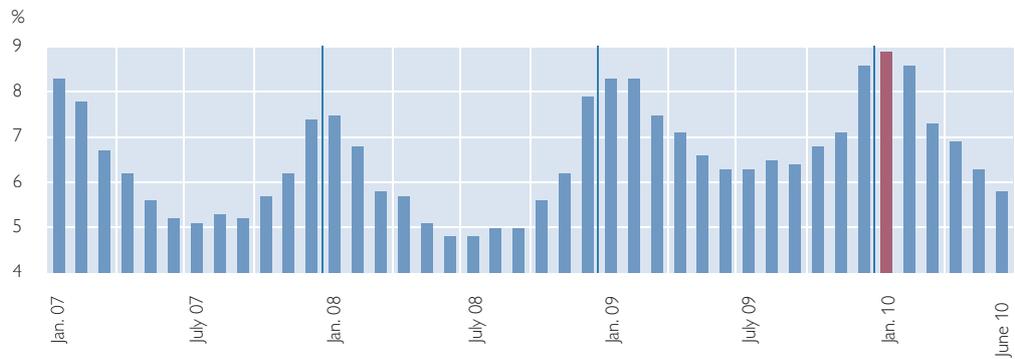
Seasonally Adjusted Data

Source: AMS, Austrian Institute of Economic Research (WIFO).

Changes in the Wage Distribution in Austria: An Analysis Based on European Union Structure of Earnings Survey Data

Wolfgang Pointner,
Alfred Stiglbauer[1]

The dispersion of hourly wages in Austria hardly changed between 1996 and 2002. Somewhat weaker growth at the bottom of the distribution implies that wage inequality increased slightly. Compared with other EU countries, however, the distribution of wages remained remarkably stable in Austria. A decomposition of the changes in the wage distribution shows that the relatively small overall change is attributable to some contrasting developments. Apparently, both market-driven and predetermined factors contributed to this marginal increase in wage inequality. In particular, higher education levels and higher returns to education caused stronger growth in the upper wage dispersion range. At the same time, the rise in women's participation in the workforce was one of the main reasons for lower wages to grow less strongly. These developments caused higher wage inequality on the one hand; on the other hand, the returns to general work experience deteriorated, which, in turn, had an equalizing effect on wages. The data also show that the differences in wages for men and women remained almost unchanged over time.

This study explores how the structure of wages and its determinants changed in Austria between 1996 and 2002. Supply and demand are essential determinants of wages in the labor market. New production processes require new qualifications, or the changing international division of labor renders certain production stages unprofitable and reduces the demand for low-skilled workers. The level of employees' education has increased markedly in most industrial nations over the past decades. Social and demographic change has often triggered higher labor participation rates of women and an increase in the average age of the workforce. The way in which the wage structure ultimately responds to these changes also depends on the institutional framework such as labor market regulation or wage-setting processes.

This paper is a concise presentation of the results of Pointner and Stiglbauer (2010a and 2010b). Interested readers may want to refer to these papers for comprehensive information on the data used and for more detailed results.

Section 1 of this paper considers various approaches to explaining the widespread increase in the inequality in hourly wages. Section 2 describes the Structure of Earnings Surveys, the data of which we used in our analysis. Section 3 provides the results of wage regressions, which we used to identify the factors influencing wages and their distribution. Building on the regression results, in section 4 we decompose the changes in wage distribution over time into detailed subcomponents, which we then divide into market-driven and predetermined factors. Section 5 provides a summary and an outlook.

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Refereed by:
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Institute for Advanced
Studies (IHS), Vienna

1 Background: Exploring the Causes of Changes in Wage Dispersion[2]

In many countries, wage dispersion has increased over the past 30 years.[3] Technological change leading to higher wages for better qualified workers, often referred to as "skill-biased technical change" (SBTC), is one of the common reasons given for explaining this rise in inequality. The SBTC hypothesis suggests that technological progress, in particular the increased use of computers and the Internet, entails an above-average rise in the productivity of highly skilled workers as unskilled labor is increasingly being replaced by these innovations. In other words, technological innovations foster inequality by causing higher wage increases in the upper part of the wage distribution, while crowding-out at the bottom results in stagnating or even declining wages. As opposed to unskilled workers, who compete directly with unqualified labor in low-cost countries, more highly qualified workers are in less danger of their jobs being outsourced abroad. It could even be the case that buying cheap labor abroad enhances the value added produced by better qualified domestic workers, whose wages, as a consequence, rise even more.

Other researchers point out the nonlinear relationship between qualification and wage growth as a result of SBTC or globalization, invoking a "polarization" of the wage distribution,[4] which means that the bottom and top groups of a distribution see higher wage growth and the middle group only moderate wage growth. They argue that it is not only the qualification required for a certain type of work that determines its substitutability by innovative technology, but also the amount of routine tasks it involves. There is a range of jobs in the middle wage group that demand higher qualifications but at the same time consist of many repetitive activities, the bulk of which could be automated. In addition, a large number of these processes do not require direct customer contact and can therefore be outsourced to other countries relatively easily.

All the approaches described so far are based on the assumption that changes in demand for particular qualifications and occupational groups prompt changes in the wage distribution. Obviously, however, supply-side factors such as the composition of the working population in terms of gender, education or age have an impact too. Contrary to demand-side factors, these developments on the supply side are more long-term in nature, predetermined by social, political and demographic trends. Distinguishing between market-driven and predetermined effects on the wage distribution will be key in this analysis at a later point.

An international comparison shows that while many countries experience similar supply- and demand-side effects, the resulting changes in wages may differ greatly. Technological progress, globalization or demographic trends impact on many OECD countries to a comparable extent; yet, wage inequality has increased more strongly in the U.K. and the U.S.A. than, for instance, in

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[2] *For an overview of this topic, see Lemieux (2008) or Goldin and Katz (2007).*

[3] *The term "wage" as used here refers to the gross pay per hour worked of employees (blue-collar workers, white-collar workers, civil servants). Differences in gross pay due to different working time arrangements are therefore not taken into account.*

[4] *Autor et al. (2006) as well as Goos and Manning (2007) have found empirical evidence for this hypothesis in the U.S.A. and the U.K.*

continental Europe. This implies that the institutional labor market framework, including wage bargaining structures, employment protection legislation, or the role of minimum wages, has a substantial effect on the wage structure.

Identifying and analyzing the causes of changes in wage dispersion is of key importance to monetary policy in the euro area. The primary objective of the Eurosystem is the maintenance of price stability, defined as a year-on-year increase in the HICP in the euro area of below, but close to 2%. Since wages are a crucial cost factor for enterprises and hence influence price setting and the

level and distribution of wages affects domestic demand for goods, wage dynamics are a major determinant of the inflation rate. For this reason, the ESCB established the Wage Dynamics Network (WDN), a research network investigating these mechanisms in depth. One of the findings of the WDN was that there are significant differences between euro area countries in terms of wage structures and how they have changed over time (ECB, 2009).

In the following, we will present an analysis of the wage distribution in Austria on the basis of Austrian micro data, which was part of a country study undertaken in the WDN. For an over-

Box 1

The ESCB Wage Dynamics Network

The ESCB established the WDN in July 2006 to analyze the characteristics and causes of wage dynamics in the EU and their implications for monetary policy, investigating the relationship between wages, labor costs and prices both at the macroeconomic and the firm level.

Following the model of earlier research networks (the Monetary Transmission Network and the Inflation Persistence Network), the WDN was guided by the questions of how wages and their individual components respond to the business cycle, how labor costs respond to macroeconomic shocks and to what extent these reactions had changed owing to the single monetary policy in the euro area. In addition, the WDN looked into the different types of wage rigidities in the EU and their main determinants. Other research groups analyzed the channels through which changes in wages affect enterprises' price setting and the roles labor market institutions or the intensity of competition in the relevant goods markets play in this process.

The WDN was organized around three research groups:

– a macro group, carrying out country- and sector-specific analyses of wage dynamics;

– a micro group, exploring how firms respond to changes in the economic environment through employment, wage and price setting decisions as well as how the size and causes of wage rigidities in EU countries should be identified; and

– a survey group, analyzing wage and price-setting at the firm level on the basis of a harmonized questionnaire.

The WDN was headed by Frank Smets, Director General of the ECB's Directorate General Research; the micro group, within which this paper was prepared, was chaired by Juan F. Jimeno of the Banco de España. In addition to representatives of 23 European central banks, the WDN also included observers from the U.S. Federal Reserve System and the Bank of Japan. From academia, Professor Giuseppe Bertola and Professor Julian Messina contributed substantially to the research. Other renowned researchers, such as Truman Bewley, Alex Cukierman and Jordi Galí were also involved in various research topics.

For further information on the work of the WDN, its publications, presentations and conference contributions as well as a summary of its findings, see www.ecb.int/home/html/researcher_wdn.en.html.

view of similar studies and a cross-country analysis, see Christopoulou et al. (2010).

2 First-Time Analysis of 1996 and 2002 Structure of Earnings Surveys Data by External Researchers

Our empirical analysis is based on the data of the European Union Structure of Earnings Surveys (ESES) conducted in 1996 and 2002. All EU Member States carry out the ESES at regular intervals (since 2002 every four years[5]) in accordance with the relevant EU regulation. The surveys provide information about the wages of employees in firms with ten or more employees in manufacturing and market services (sections C to K of the ÖNACE 2003 classification). The employee data compiled comprise gross earnings and their components like base, overtime and holiday pay, premiums and compensation for night, shift and holiday work as well as personal characteristics like gender, age, education level and tenure with the current employer. The employer data cover industry affiliation, the region in which the enterprise is based, the number of employees and the type of collective bargaining agreement that must be applied.

For reasons of confidentiality, usually only Statistics Austria and Eurostat staff have access to ESES data. Thanks to the WDN's cooperation with Statistics Austria, however, we were able to use the data for this study.

2.1 Scope and Type of the Surveys

In the first ESES launched in 1996, data from 8,687 firms, covering 121,926 employees, were compiled. The 2002 survey yielded information on 140,115 employees from 10,036 firms. The data are representative of some 1.75 million employees in the above-mentioned sectors.

Compared with other sources of data on earnings, ESES data have considerable advantages. First, the data relating to the level of an individual employee's wages are collected directly from the employer, which ensures a greater degree of accuracy. A number of papers on wage dispersion are based on household surveys, and such data are only partially reliable, as many people can or want to give only rough information about their earnings situation. Another comprehensive data source, the Austrian social insurance institutions, records wages only up to the maximum contribution base and therefore lacks information on the right tail of the wage distribution. Second, ESES records regular working and overtime hours, which allows the precise calculation of gross hourly wages.

2.2 Achieving Comparability of Survey Data

The 1996 ESES was limited to what we termed "core employees," i.e. persons who were in employment throughout the entire year (or seasonal workers with a job guarantee) and did not include the marginally employed. In the 2002 ESES, 24% of those surveyed were not employed for the full year, and 4% were marginally employed. To achieve the greatest comparability of data possible, we adjusted the 2002 dataset by the observations that related to persons not employed for the full year or to marginally employed persons.

Furthermore, there was a difference in sampling in the two surveys: While

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[5] Due to time constraints, we were not able to include ESES 2006 data in this analysis during the project. First descriptive results can be found in Geisberger (2008). Since 2006, a larger number of sectors have been added to the survey.

in 1996 the data were provided by establishments, in 2002 enterprises were covered. In addition, in 2002 the enterprises surveyed were asked to provide data about certain, previously selected employees, unlike in 1996, when the establishments were required to deliver information about a certain number of employees the selection of whom had been up to them.

Finally, we excluded persons younger than 16 and older than 65 years from our analysis. Neither did we consider employees whose wages were below the 1st and above the 99th percentile of the distribution in order to correct for statistical outliers.

2.3 Higher Share of Women, Rise in Education, Higher Average Age

After sample selection, our wage distribution analysis covered 93,702 observations (employees) for 1996 and 85,404 for 2002. A simple statistical evaluation of these data reveals that the following changes took place in the Austrian labor market between 1996 and 2002 (table 1).

The share of women in the total number of employees increased by 5.3 percentage points; also, there was a slight rise in the age and education level of employees in general, while the average tenure with an employer decreased. The number of years in education refers to statutory school years, i.e. the years required to attain a certain level of education. As regards employers, there was a trend towards smaller firms; in the 2002 sample, almost half of all employees worked at enterprises with 25 or fewer employees. The regional

composition[6] is also relatively stable, showing a slight increase in employment in eastern Austria at the cost of employment in the southern provinces.

The average nominal gross hourly wage[7] rose from EUR 10.39 in 1996 to EUR 11.84 in 2002, or by 13.9%. Adjusted for HICP inflation, hourly wages increased by 4.3% in real terms in this period. The distribution of wages changed only marginally over these years. The Gini coefficient, a widely

Table 1

Composition of Samples in 1996 and 2002

	1996	2002	Difference
	%		Percentage points
Men	67.3	62.0	−5.3
Women	32.7	38.0	5.3
	Years		
Age	37.0	38.4	1.4
Formal education	10.4	10.7	0.3
Tenure with current employer	9.5	9.1	−0.4
	%		Percentage points
Firm size			
≤ 25 employees	38.7	45.1	6.4
26 to 50 employees	23.5	24.3	0.8
51 to 100 employees	14.6	10.4	−4.2
101 to 250 employees	11.9	9.3	−2.6
251 to 500 employees	5.2	5.0	−0.2
> 501 employees	6.2	6.0	−0.2
Region			
Eastern Austria	35.8	39.9	4.1
Southern Austria	24.8	20.7	−4.1
Western Austria	39.4	39.4	0.0
Number of observations	93,702	85,404	×

Source: 1996 and 2002 European Union Structure of Earnings Surveys.

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[6] We apply the NUTS 1 classification of regions, which divides Austria into eastern Austria (Burgenland, Lower Austria, Vienna), southern Austria (Carinthia and Styria) and western Austria (Upper Austria, Salzburg, Tyrol, Vorarlberg).

[7] The wage measure used here is calculated by dividing gross earnings including overtime and shift premiums by the number of hours worked.

used measure of inequality,[8] increased from 0.209 to 0.214, which can be attributed to the particularly strong rise in the wages at the top of the distribution. While the real increase in wages was 2.8% at the 10th percentile, 4.6% at the median and 4.3% at the 90th percentile, it was as high as 8.1% at the 99th percentile. In international terms, however, the widening of wage inequality in Austria can be considered very moderate. Christopoulou et al. (2010) analyzed the wage structure in nine EU Member States and found more pronounced changes in each of these countries than in Austria.

Therefore we would like to stress that, due to the data limitations described in section 2.2, this paper cannot provide an assessment of the *general* distribution of wages, since the dataset consists of only those employed for the full year and does not include marginally employed people. It is likely that including the groups of employees that we have omitted in this analysis would point toward more inequality and a higher increase of wage dispersion over time.

A breakdown by gender reveals considerable differences in the hourly wages of men and women. In 1996, men earned an average EUR 11.10 per hour worked, women only EUR 8.93. On average, male employees' wages were EUR 2.17 or 24.4% higher than those of female employees. In 2002, men's hourly wage at current prices averaged EUR 12.75, whereas the equivalent wage for women was EUR 10.36. These figures show that the (unadjusted) wage differential contracted somewhat but still amounted to a noteworthy 23.1%.

The descriptive statistics illustrate the inequality in the distribution and gender-specific or other differences in wages but cannot provide information on the extent to which individual factors contribute to these differences. Therefore, we continue in section 3 by presenting a model explaining the different wage levels.

3 Wage Regressions: Determinants and Wage Levels

Based on Mincer (1974), the wage level can be expressed as a function of human capital, with the latter representing all employee characteristics that contribute to productivity such as education or general work experience. It is assumed that enterprises are willing to pay higher wages for employees with higher human capital. In order to empirically determine the relationship between education and wage level, we estimate a Mincer wage regression:

$$\ln \omega_i = \beta_0 + \beta_1 s_i + \beta_2 a_i + \\ + \beta_3 a_i^2 + \beta_4 t_i + \beta_5 t_i^2 \tag{1}$$

We regress the logarithm of wage ω of an employee i on a constant β_0, the number of years s of formal education and age a as well as tenure with the employer in years t. The employees' age a represents their (potential) work experience under the assumption that firms are willing to pay employees with more experience (and who have undergone continuing professional education too) higher wages. Longer tenure with an employer t creates more firm- and sector-specific human capital, which also enhances labor productivity. We

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model the effect of this experience variable on the wage level in a nonlinear way. The coefficients β_3 and β_5 to the squared variables a^2 and t^2 should be negative.

In the semilogarithmic specification of equation 1, the parameter β_1 expresses in percent by how much the real wage ω will be higher if school or university education increases by one year. Therefore, this parameter is also referred to as the returns to (formal) education; the coefficients β_2 and β_4 could analogously be interpreted to stand for general and firm-specific work experience.

3.1 Average Quantitative Relationships

Table 2 summarizes the results of these regressions in the years 1996 and 2002 for all employees as well as for women and men separately. It shows that in 1996, each additional school year increased an employee's wage by 6%; by 2002, this effect had risen to 7.1%.[9] The decline in the returns to education that Fersterer and Winter-Ebmer (2003) found for the period 1981 to 1997 apparently did not continue.

The result means that in 2002 employees holding university degrees earned hourly wages that were more than 28% higher than those of upper

Results of Simple Wage Regressions

	1996			2002		
	All	Women	Men	All	Women	Men
School years	0.060 [0.001]***	0.086 [0.001]***	0.051 [0.001]***	0.071 [0.001]***	0.079 [0.001]***	0.066 [0.001]***
Age	0.028 [0.001]***	0.023 [0.001]***	0.030 [0.001]***	0.017 [0.001]***	0.016 [0.001]***	0.019 [0.001]***
Age^2/100	−0.027 [0.001]***	−0.022 [0.001]***	−0.029 [0.001]***	−0.015 [0.001]***	−0.014 [0.001]***	−0.016 [0.001]***
Tenure with current employer	0.014 [0.000]***	0.017 [0.001]***	0.012 [0.000]***	0.012 [0.000]***	0.014 [0.001]***	0.010 [0.000]***
Tenure with current employer^2/100	−0.007 [0.001]***	−0.003 [0.002]	−0.006 [0.001]***	−0.003 [0.001]**	0.005 [0.002]*	−0.002 [0.002]
Women	−0.168 [0.002]***			−0.165 [0.002]***		
Number of observations	93,702	30,611	63,091	85,404	32,460	52,944
R^2	0.380	0.390	0.310	0.330	0.310	0.260

Source: OeNB.

*Note: Standard errors in brackets. *, **, *** denote significance at the 10%, 5% and 1% level respectively. The coefficients of the gender dummy variable are OLS coefficients transformed with ($exp(\beta_{Women})−1$).*

[9] *In the specification of the Mincer wage equations with age a as an explanatory variable, as applied by the WDN, the returns to formal education do not simply equal β_1 from equation 1, but reads, strictly speaking, $\beta_1 + \beta_2 + 2\beta_3\bar{a}$, with $\bar{a}$ representing the mean age. The results are very similar, however (the increase in the returns to education would be 0.9 percentage points), particularly as regards the differences between men and women. In the following, we continue to interpret β_1 not quite accurately as the returns to education as it is irrelevant in the decomposition into market-driven and predetermined factors that will be performed at a later point.*

secondary education graduates who had acquired the same number of years of work experience. Both in 1996 and 2002, the returns to additional education were higher for women than for men although the difference became a little smaller over time. The coefficient of 0.079 for women in 2002 means that, ceteris paribus, an additional year of education increased a female employee's wage by 7.9%.

The effects of the experience variables decreased for both groups over time. Both age and tenure showed lower coefficients in 2002 compared with 1996. The effects of the squared experience variables are, as expected, negative. The decrease[10] of the age coefficient may also indicate that the seniority principle, according to which older employees are paid higher wages, may have lost some importance. This is in line with the findings of Fersterer and Winter-Ebmer (2003). In both years, the age coefficients for women are smaller than for men, which can be attributable to more women than men experiencing career interruptions; this implies that women's work experience tends to be overestimated, which results in a downward bias of the coefficient.

The wage regression for all employees also included a dummy variable for gender, which showed that women's wages were 16.8% (16.5%) lower than men's in 1996 (2002) even if differences in education and work experience are taken into account. In section 2.3, we identified a wage differential of 23.1% between men and women (2002). This result, however, referred to average wages without taking into consideration differences in human capital. Put differently, only 6.6% of total gender-specific differences in wages in 2002

(23.1%) were attributable to differences in education or experience, while 16.5% cannot be ascribed to these factors.

3.2 Variable Influencing Factors alongside the Wage Distribution

So far we have used ordinary least square (OLS) regressions in our analysis, which assume a stable relationship between wages and education across the entire wage distribution. The returns to one year of formal education estimated at 7.1% for 2002 correspond to the mean value of all observations in our sample. To examine the possibility of the relationship changing across the distribution, we estimated the wage equations also as quantile regressions (box 2).

Estimating equation 1 as a quantile regression for 1996 and 2002 yields the following (chart 1): The returns to education increase across the distribution; for instance, for 1996, in the entire sample, an additional year of secondary or tertiary education raised the hourly wage by 3.2% at the 10th percentile and by 7.2% at the 90th percentile. As mentioned earlier, the returns to education in general rose from 1996 to 2002, with the increase having been highest at the lower end of the distribution (left-hand panel in chart 1). However, only men benefited from this development (right-hand panel). For women, the returns to education even decreased over time. This notwithstanding, in 2002 it was still higher than the returns to education for men (middle panel in chart 1). Between the median and the 70th percentile, an additional year of formal education still meant 8% to 9% higher wages for women (2002).

The coefficients of the age variables also trend upward across the distribu-

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[10] *The effects of work experience and tenure with an employer also decline when the results for the squared terms are taken into account.*

Box 2

Quantile Regressions

Regression analyses are usually carried out to approximate the mean value of a conditional distribution by minimizing the sum of deviation squares (OLS). If, however, more than the mean relationship between dependent and independent variables is of interest, quantile regressions can be run to estimate the effects of the explanatory variables in different quantiles of the distribution. Since it can be assumed, for instance, that the returns to formal education increase the higher an employee's wage is, we have also used this method in our analysis. Further information about other areas of application and a short introduction can be found in Koenker and Hallock (2001). Starting from a wage equation

$$\omega_i = z_i \beta_\theta + u_{\theta i} \text{ where } Q_\theta(\omega_i | z_i) = z_i' \beta_\theta$$

with $Q_\theta(.)$ referring to the θth quantile of the distribution of the wage ω estimated from the variable z_i, we aim to obtain a solution for β by minimizing the least absolute deviation (LAD):

$$\min_\beta \sum_i \rho_\theta \left(\omega_i - z_i \beta_\theta \right)$$

where $p_\theta(\omega_i - z_i \beta_\theta)$ can take the following values:

$$\rho_\theta \left(\omega_i - z_i \beta_\theta \right) = \begin{cases} 2\theta \left(\omega_i - z_i \beta_\theta \right) & \text{if} \quad \left(\omega_i - z_i \beta_\theta \right) \geq 0 \\ 2(1-\theta) \left(\omega_i - z_i \beta_\theta \right) & \text{if} \quad \left(\omega_i - z_i \beta_\theta \right) < 0 \end{cases}$$

This implies that an unweighted minimum for the deviations will be identified for the median ($\theta = 0{,}5$), while in all other quantiles the optimization will be carried out through weighted deviations.

Effect of an Additional Year of Education on the Wage Level (2002)

%

Percentile

— Quantile regression   – – 95% confidence interval   — OLS   – – 95% confidence interval

Source: OeNB.

The chart shows the coefficients of years of formal education from equation 1 in an OLS and a quantile regression across the distribution; it also displays the 95% confidence intervals for both estimators. While the OLS coefficient necessarily remains constant in all quantiles, the quantile regression shows that the returns to education increase across large parts of the distribution. For employees at the 10th percentile, each additional school year entails a 5% higher wage; from the 70th percentile, the returns already exceed 8%. The confidence intervals show that the difference between the results of the OLS estimation and the quantile regression is statistically highly significant.

tion, which means that work experience pays more for employees with higher wages. The decline in the returns to general experience was moderate compared with the returns to education. In 2002, it amounted to only 0.6% per additional year at the 10th percentile and to 3.6% at the 90th percentile. Tenure with an employer increases wages only marginally for higher (male) wage earners; for women, this effect is relatively constant across the distribution. Firm- or sector-specific skills seem to carry more weight for low-wage earners, whereas general skills and formal education play a more important role in the higher wage groups.

As mentioned above (table 2), the gender-specific difference in wages (as measured by the gender dummy variable) averages 17%. The quantile regressions show that this difference is smaller in the lower part of the distribution. At the 10th percentile, it was only 13.5% in 2002 (14.3% in 1996); at the 90th percentile, women earned as much as 20.9% (1996: 19.7%) less than men with the same human capital characteristics.

## 4 Decomposition of Changes in Distribution by Subcomponents

As we mentioned at the beginning, changes in the distribution of wages can be broken down into two groups: price effects and quantity effects. Price effects occur when the level of wages paid for certain characteristics of employees changes. For instance, if demand for human capital increases and the supply of labor remains unchanged, higher educated employees will earn more. Quantity effects may occur as the composition of the workforce changes over time. If the number of people attaining higher education levels increases and, as a consequence, these people accumulate more human capital and earn higher wages, the wage structure will change, even if the returns for each year of education remain constant. In the following, we will introduce a method allowing a breakdown of the observed wage dynamics into price changes and quantity changes.

4.1 Machado-Mata Method

The Machado-Mata method is based on quantile regressions. For these we use an extended specification, comprising

Chart 1

Returns to Education in Quantile Regressions
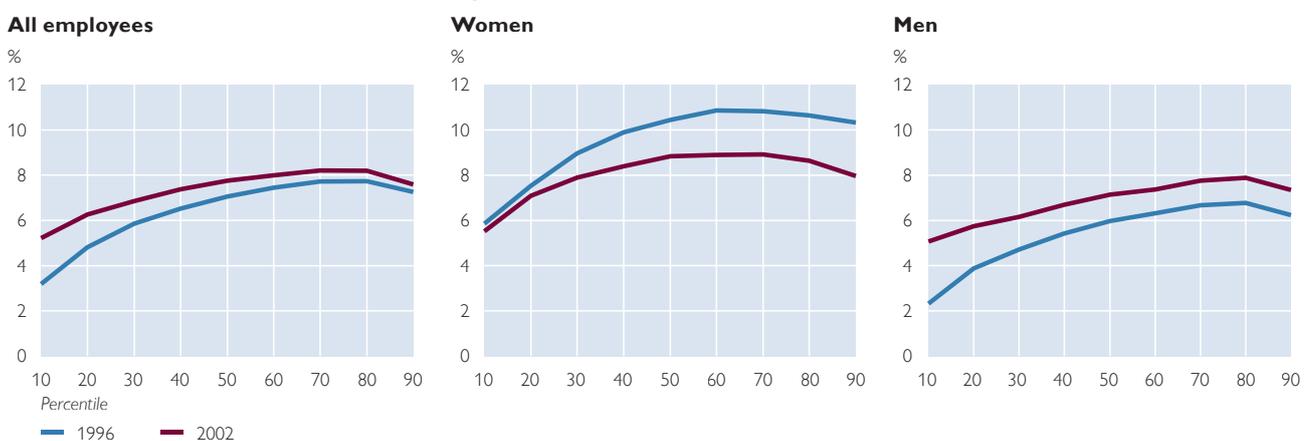
Source: OeNB.

– in addition to the human capital variables used so far – workplace characteristics that influence wage levels. The ESES data include employer information, such as firm size, sector (according to the ÖNACE classification), the region in which the enterprise is located (according to NUTS), as well as information about the professional position of employees (according to ISCO). When these variables are incorporated in the wage regression one can see that, for instance, larger enterprises pay their employees higher wages than those with a smaller number of employees, or that the wage level is lower in southern Austria than in the rest of the country. At the same time, the effects of the human capital variables (formal education, potential experience, tenure with an employer) decrease; the picture obtained previously does not change qualitatively, however.

The Machado-Mata method is a refinement of the Blinder-Oaxaca decomposition, which was originally used to measure discrimination in the labor market. The latter involves, essentially, the estimation of wage regressions, and the differences between wage levels are attributed to differences in the explanatory variables (human capital factors) and to differences in the coefficients (pay for human capital factors). Machado and Mata (2005) extended this decomposition across an entire distribution instead of using differences in the means.

$$\ln(\omega_\theta^{2002}) - \ln(\omega_\theta^{1996}) =$$

$$= \left(\bar{z}_\theta^{2002} - \bar{z}_\theta^{1996} \right) \beta_\theta^{2002} - \qquad (2)$$

$$- \bar{z}_\theta^{1996} \left(\beta_\theta^{2002} - \beta_\theta^{1996} \right) + \left(\varepsilon_\theta^{2002} - \varepsilon_\theta^{1996} \right)$$

As equation 2 shows, the difference between the log real wage at a specific quantile θ in the years 1996 and 2002, $\ln(\omega_\theta^{2002}) - \ln(\omega_\theta^{1996})$, is related to two

counterfactual changes. The first term on the right-hand side of the equation specifies by how much wages would have changed if the observable characteristics of the employees alone

$$\left(\bar{z}_\theta^{2002} - \bar{z}_\theta^{1996} \right)$$

had changed (quantity effect); the second term specifies by how much wages would have changed if the pay for the characteristics had changed between 1996 and 2002 while the distribution of these characteristics had remained at the 1996 level (price effect). This decomposition implicitly assumes that both price effects and quantity effects change independently of each other.

The two counterfactual changes cannot be observed but are approximated by the results of the quantile regressions. However, the average expected value of a characteristic at a certain quantile $\bar{z}_\theta$ cannot be measured, as each quantile is just a single observation. Therefore, we approximate these values by bootstrapping as suggested by Albrecht et al. (2003).

4.2 Market-Driven and Predetermined Changes in Wage Dispersion

Following WDN conventions, we divided the effects into two groups: Quantity effects in employment as regards female participation rates, age structure and education level are considered "predetermined" since they are attributable to long-term social or demographic change and hence hardly subject to the influence of market processes. All other changes, especially price effects like changes in the returns to education or work experience, are considered to be market-driven. In addition, tenure or the sectoral distribution of employment is very much influenced by the markets.

Chart 2 shows the composition of wage changes across the distribution, clearly illustrating that the wage increases between 1996 and 2002 were attributable to a large extent to market-driven factors. The model we used provides a fairly satisfactory explana-

Chart 2

Composition of Wage Changes (1996 to 2002)

Source: OeNB.

Chart 3

Contribution of Predetermined Changes to Wage Growth (1996 to 2002)

Source: OeNB.

tion of the observed wage changes, albeit somewhat underestimating the 1st decile and overestimating the 7th decile. The wage changes shown in chart 2 refer to all employees (men and women). While from 1996 to 2002 the wage increase was only 2.7% at the 1st decile, wages above the median rose by more than 4% over the same period. The market-driven contributions to the wage changes were positive – and somewhat higher in the upper quantiles – across the entire distribution. The predetermined changes caused negative changes in particular in the lower wage groups and – mostly – positive contributions in the upper part of the distribution. This means that the increase in wage inequality was attributable to both market-driven and predetermined factors.

Chart 3 provides a more detailed picture of the contribution of predetermined factors to the changes in the wages of all employees, illustrating that the effects of the factors discussed here were working in different directions. While the changes in the composition of the labor force in terms of education and age led to higher wages in 2002, the changes in the gender distribution prompted a decline in the wages below the median. Chart 3 also shows that the share of women in the total number of employees clearly rose above all in jobs where wages were below the median. Hence, the increase in the number of women in employment resulted overall in more inequality in the distribution of hourly wages.

Employees' higher average age, by contrast, provided for more equality in the wage structure. At the same time, higher education levels led to higher wage increases in the upper part of the distribution, thus contributing to more wage inequality.

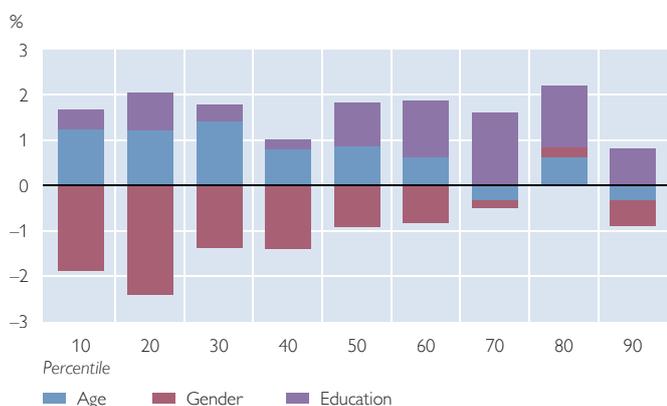Chart 4 highlights some market-driven components of the changes in

Chart 4

Contributions of Market-Driven Changes of Selected Characteristics to Wage Growth (1996 to 2002)
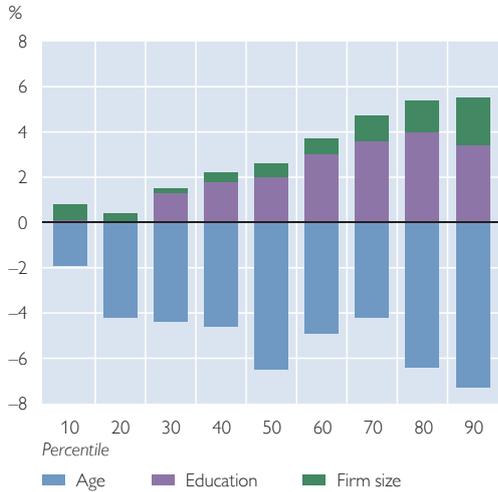
Source: OeNB.

wages: The rise in the returns to education, for instance, fueled wage growth at the upper end of the distribution by between 3.5% and 4% between 1996 and 2002, while having no such strong effect at the bottom of the distribution. Employment in large enterprises was found to work in the same direction – albeit at a much lesser scale. From 1996 to 2002, the difference in wages paid by small and large firms increased – more strongly at the upper wage levels than at the lower levels. Both effects led to more inequality in the wage distribution.

By contrast, the returns to age (our proxy for general work experience), which diminished over time, contributed to more equality in the wage distribution. While the returns to experience decreased by between 2% and 4% at the lower wage level, the decline amounted to up to 7% at the upper percentiles. The changes in the returns to these three characteristics (age, education, firm size) almost canceled each other out in the upper half of the distribution.

5 Summary and Outlook

In this study, we discuss the results of a country study conducted within the framework of the ESCB research network WDN, using the data of the 1996 and 2002 European Union Structure of Earnings Surveys (ESES). It was the first time that researchers outside national statistical offices were given access to these data.

The dispersion of wages in Austria changed only marginally between 1996 and 2002. Real hourly wages rose by 4.3%, an increase which was seen across almost the entire wage distribution; wage growth was smaller only in the lower part of the distribution, which implies a moderate increase in wage inequality. An international comparison shows that wage dispersion changed significantly more strongly in other countries.

From wage regressions we find that the returns to formal education rose in the period under review, which seems to have compensated for at least some of the decline seen here earlier. A systematic decomposition of changes in the wage distribution over time shows that the moderate (net) changes can be traced to some contrasting developments. We classified the factors contributing to the changes in wage dispersion to be either market driven or predetermined and found that both types impacted on the distribution of wages. The returns to education increased along with the number of higher educated employees, and both factors triggered higher wage increases in the upper part of the wage structure. At the same time, the rise in women's participation in the workforce was one of the main reasons for lower wages to grow less strongly. In other words, these changes fostered wage inequality. In contrast, the returns to other personal characteristics of employees led

to a decline in inequality. The returns to general work experience, for instance, deteriorated more markedly for higher wage earners.

The gender wage gap remained surprisingly constant over the period under review. Even when accounting for differences in education, age and tenure with an employer, the average difference in wages for men and women was some 17% in both 1996 and 2002. This difference increases in the upper wage groups, amounting to 14% in the lower part of the distribution and to 20% in the upper part, a fact that hardly changed over time.

Since the ESES has many advantages compared with alternative data sources and are carried out at regular intervals, in future researchers will be able to investigate changes in the distribution of wages over longer periods of time.

References

Albrecht, J., A. Björklund and S. Vroman. 2003. Is there a Glass Ceiling in Sweden? In: Journal of Labor Economics 21.145–147.

Autor, D. H., L. F. Katz and M. S. Kearney. 2006. The Polarization of the US Labor Market. In: American Economic Review Papers and Proceedings 96(2). 189–194.

Christopoulou, R., J. F. Jimeno and A. Lamo. 2010. Changes in the Wage Structure in EU Countries. ECB Working Paper 1199.

ECB. 2009. Wage Dynamics in Europe. Final Report of the Wage Dynamics Network (WDN). Frankfurt.

Fersterer, J. and R. Winter-Ebmer. 2003. Are Austrian Returns to Education Falling over Time? In: Labour Economics 10(1). 73–89.

Geisberger, T. 2008. Verdienststrukturerhebung 2006 – Ergebnisse im Überblick. In: Statistische Nachrichten 9. 827–837.

Goldin, C. and L. F. Katz. 2007. Long-Run Changes in the U.S. Wage Structure: Narrowing, Widening, Polarizing. In: Brookings Papers on Economic Activity 2. 135–165.

Goos, M. and A. Manning. 2007. Lousy and Lovely Jobs: The Rising Polarization of Work in Britain. In: The Review of Economics and Statistics 89(1). 118–133.

Koenker, R. and K. Hallock. 2001. Quantile Regression. In: Journal of Economic Perspectives 15(4). 143–156.

Lemieux, T. 2008. The Changing Nature of Wage Inequality. In: Journal of Population Economics 21(1). 21–48.

Machado, J. and J. Mata. 2005. Counterfactual Decomposition of Changes in the Wage Distributions using Quantile Regression. In: Journal of Applied Econometrics 20. 445–465.

Mincer, J. 1974. Schooling, Experience and Earnings. National Bureau of Economic Research. New York.

Pointner, W. and A. Stiglbauer. 2010a. Changes in the Austrian Structure of Wages, 1996–2002: Evidence from Linked Employer-Employee Data. In: Empirica 37. 105–125.

Pointner, W. and A. Stiglbauer. 2010b. Changes in the Austrian Structure of Wages, 1996–-2002: Evidence from Linked Employer-Employee Data. ECB Working Paper (forthcoming).

Statistics Austria. 2006. Verdienststrukturerhebung 2002. Vienna.

Discount Pricing in Austria: Insights into Retail Business Practices and HICP Coverage

Discount pricing – the strategy of reducing regular prices through quantity, seasonal, cash or promotional discounts, coupons, customer loyalty programs and the like – plays an important role in retail pricing and is widespread business practice in virtually all retail industries in Austria. This is the main result of our study, for which we surveyed major Austrian retailers and analyzed empirical data compiled by A.C. Nielsen. Moreover, we found that shoppers who participate in customer loyalty programs benefit from discounts more frequently and pay less on average than shoppers who do not.

In Austria, three out of four consumers held at least one loyalty card in 2008. All in all, some 30 million loyalty cards were circulating in Austria at the time, with five cards per cardholder being the average. 90% of respondents indicated the prospect of instant rebates as the main incentive for holding loyalty cards.

The retailers participating in the OeNB survey generate roughly one-third of their sales revenue under customer loyalty programs. On the consumer side, the average level of retail discounting (as established in the OeNB survey) adds up to a purchasing power effect of approximately EUR 300 million a year.

In addition, the paper assesses the HICP coverage of discounts with a view to drawing lessons for policymaking. The current measurement practices are found to reflect some but not all forms of discounting. Looking ahead, it would be advisable to change measurement practices to catch the effect of customer loyalty programs, as they are common in many industries and tend to generate higher discounts than other discounting practices. The most suitable method would be to cover retailers who run loyalty programs throughout Austria and offer the same terms to all cardholders. Retail scanners could provide useful price data for inflation measurement.

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JEL classification: D11, D12, E31, L81
Keywords: discount pricing, price differentiation, customer loyalty program, retail business, inflation measurement, coverage of discounts, HICP, Austria

1 Retail Discounting – A Widespread Yet Elusive Business Practice

Offering discounts for different products or periods or to various buyers plays an important role in retail pricing, both in the business-to-business (B2B) setting and at the business-to-consumer (B2C) level, to which we restrict our analysis in this paper. While companies and shops readily provide information on sales and promotions on their websites or through their customer loyalty program channels, the quantitative effects of discounting are nonetheless hard to pin down – analyzing the macroeconomic impact of retail discounting is quite a challenge.

Our study is motivated by the fact that inflation measures need to be representative of actual prices and by the understanding that pricing and discounting practices have an impact on measured prices. While today's inflation measures already reflect different types of discounts, they do not cover the special terms linked to customer loyalty programs. Given the fundamental importance of the HICP inflation rate for monetary policymaking in the euro

Refereed by:
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Statistics Austria

area and for the Eurosystem's objective of maintaining price stability in the medium term, we have in a first step analyzed the discounting policies of Austrian retailers to establish their underlying patterns and relative importance. In a second step we have compared those results with the established practice of inflation measurement.

Section 2 looks into the theoretical background of price differentiation as a pricing instrument, discusses the relevant preconditions and outlines different types of price differentiation. Moreover, section 2 discusses the different types of discounts retailers grant in practice under customer loyalty programs and through other channels, and briefly summarizes the underlying benefits and drawbacks for businesses and consumers.

Section 3 provides a quantitative assessment of retailers' discounting practices and their relative importance, based on a survey conducted among selected retail chains operating in the Austrian market. In addition, this section looks into the question of how widespread customer loyalty programs are. Section 4 analyzes how retail discounting is generally reflected in inflation measures, based on a number of case studies. Section 5 assesses the purchasing power effect that membership in customer loyalty programs creates for Austrian consumers. Section 6 provides a summary overview and makes suggestions for changing measurement practices to adequately reflect discounts granted under customer loyalty programs.

Selected Definitions

Discount pricing: Refers to the widespread retail practice of granting temporary or permanent price reductions, for instance in the form of cash discounts, quantity discounts, limited-time discounts, personalized discounts or loyalty discounts, or in the form of sale prices and coupons (see also question 1 of the attached questionnaire). Discounts are an integral part of the benefits of customer loyalty programs but are not limited to such programs (see also box 3). When linked to loyalty programs, discounts are customized and conditional on ownership of a loyalty card. Otherwise, discounts are granted across the board to all consumers buying products that have been marked down. This paper analyzes both types of retail discounting in the business-to-consumer segment.

Price differentiation (discrimination, customization): Refers to the business strategy of charging different prices in different market segments in order to raise additional revenue by exploiting the consumer surplus that can be achieved in the given market.

Discount: A discount is a price reduction (by a certain amount or percentage) from the suggested retail price or from the sticker price.

Consumer surplus: The difference between the maximum consumers are willing to pay for a commodity or a service (also called reservation price) and the price they are actually charged.

Reservation price: Refers to the maximum consumers are willing to pay for a commodity or a service depending on their income and individual preferences or – from the seller's perspective – to the lowest price at which suppliers would sell.

Inflation as measured by the HICP: Every month, Statistics Austria collects the prices of approximately 40,000 individual items at some 4,000 outlets as the basis for the calculation of specific price indices for 760 goods and services typically acquired by households, using the applicable expenditure weights. The individual indices sum up to headline inflation, i.e. the rate at which all prices have changed compared with the previous month, or the same month of the previous year. The HICP, i.e. Harmonised Index of Consumer Prices, is thus called because it is calculated with an approach that has been broadly harmonized at the EU level. It is the key indicator on which the Eurosystem relies for monetary policymaking.

HICP coverage of discount pricing: The general approach is that the HICP does not reflect cases of price differentiation in which a limited group of consumers has price privileges or in which discounts are not directly assignable to a particular good. Hence, individual price advantages that come with loyalty programs are not covered, whereas some price advantages not linked to customer loyalty programs are (exceptions include coupons that may not be linked to a particular product). Price surveys have been designed to document nondiscriminatory discounts or discounts which apply to all purchases of a specific good. The specifics of calculating price indices are governed by EU rules for treating price reductions in the HICP as well as by the guidelines and recommendations laid down in the international Consumer Price Index Manual.

2 Profit Maximization by Price Differentiation

Pricing, i.e. setting regular and discount prices, has gained in importance for retailers in recent years in both strategic and operational terms: There are a number of industries in which customers are highly price-sensitive and will readily switch to cheaper suppliers (Janger, 2010).[2] At the same time, retailers heavily advertise the special prices and terms they offer with a view to gaining market shares. Analyzing, planning, implementing and evaluating pricing instruments has thus become all the more important also as an integral part of corporate marketing policies.

In a dynamic economy, companies use different pricing policies and strategies to optimally target specific market segments. Differentiated market strategies exploit the heterogeneity of the client base and allow companies to charge different (groups of) clients different prices for the same or similar products or services.

The main purpose of price differentiation is to exploit the consumer surplus in individual markets to increase profit. Retailers will be able to achieve the highest possible average price in each case by adjusting prices to different customer groups. Another purpose of differentiating prices is to target a specific customer base. Companies

with a regional and international network of outlets will test the market by charging different prices in different segments. Last but not least, price differentiation strategies allow retailers to increase sales volumes and to influence the timing of purchase decisions (Siems, 2009).

Price differentiation has different benefits for different customer segments. While customers with very high demand elasticity and low purchasing power benefit from discount pricing, customers with low demand elasticity and stronger purchasing power are liable to pay higher prices. The impact differentiated prices will have on aggregate price levels depends on the relative size of the market segments and on the differences in demand elasticity (box 2).

Numerous empirical studies (for a compact overview see Wolk, 2007) have shown that price differentiation strategies enable retailers to raise their profits by a range of 4% to 10%, or even by up to 26% (e.g. Khan and Jain, 2005). This goes to show that it pays for companies to select and implement price differentiation strategies.

2.1 Preconditions for Various Types of Price Differentiation

Imperfect markets are a key prerequisite for differentiating prices – in other words, differentiation requires an envi-
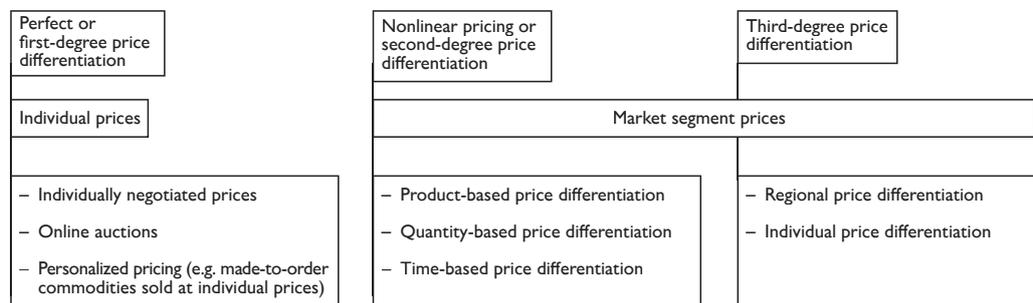
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[2] *E.g. in food and electronics retailing, price comparison rates are as high as 70% or more, and consumers consider the effort of comparing prices to be lower in this area than in most other industries.*

ronment in which consumers have different levels of information and different preferences. In a perfect market, consumers would only buy at the lowest price. A further precondition is that it must be possible to segment the market in terms of purchasing power, demand elasticity, price awareness and price information. Companies must identify different demand segments and must be able to make higher profits to recover the costs of segmenting the market. Finally, retailers must be able to prevent consumers who get a commodity at a discount to resell it to customers in upscale segments (absence of arbitrage opportunities).

Macroeconomics and business economics (microeconomics) define price differentiation differently. The microeconomic strand of the literature[3] distinguishes between three forms of price differentiation (Weber and Pasche, 2008), following Pigou (chart 1), who first developed this theory in 1920. In a first-degree differentiation setting, every single customer is charged the maximum price (reservation price), so that the seller gets all of the consumer surplus. A case in point for such perfect price discrimination would be online auctions. Second-degree differentiation, or nonlinear pricing, leads to a self-selection of customers: By deciding to
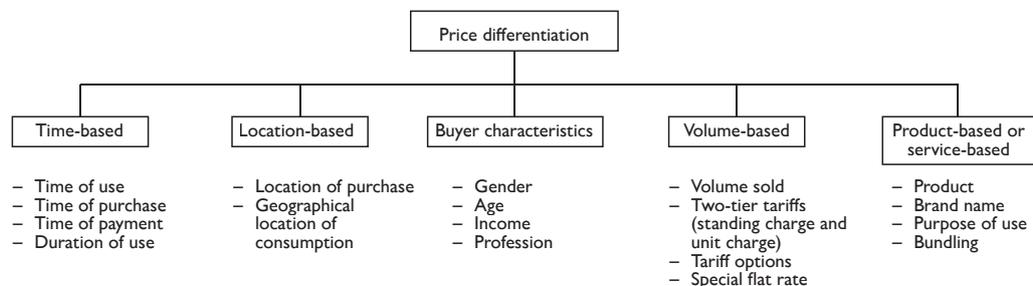
Chart 1

Types of Price Differentiation Based on Pigou

Perfect or first-degree price differentiation	Nonlinear pricing or second-degree price differentiation	Third-degree price differentiation
Individual prices	Market segment prices	
– Individually negotiated prices – Online auctions – Personalized pricing (e.g. made-to-order commodities sold at individual prices)	– Product-based price differentiation – Quantity-based price differentiation – Time-based price differentiation	– Regional price differentiation – Individual price differentiation

Source: Hartmann (2006).

Chart 2

Types of Price Differentiation

		Price differentiation		
Time-based	Location-based	Buyer characteristics	Volume-based	Product-based or service-based
– Time of use – Time of purchase – Time of payment – Duration of use	– Location of purchase – Geographical location of consumption	– Gender – Age – Income – Profession	– Volume sold – Two-tier tariffs (standing charge and unit charge) – Tariff options – Special flat rate	– Product – Brand name – Purpose of use – Bundling

Source: Based on Siems (2009).

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[3] *Even the terminology varies; the macroeconomics term of choice for price differentiation is "price discrimination," whereas business economics leans toward "price customization" (Siems, 2009).*

buy something, the customer self-assigns himself or herself to a particular segment. Finally, if a company determines the optimum price for each segment *without* the customer having a possibility of self-selecting the segment to which he or she belongs, we have a case of third-degree price differentiation (see box 2 for a theoretical overview). Switching segments is either impossible or highly dif-

ficult because the individual segments are fenced. Last but not least, in second- and third-degree price differentiation, prices are typically not negotiated with customers and price demands generally lack customization (Hartmann, 2006).

Chart 2 provides another definition of price differentiation, based on microeconomic criteria such as time, location and quantity.

Box 2

The Theory of Third-Degree Price Differentiation

According to economic theory, a firm may increase its revenue by segmenting its market into a number of submarkets (the charts below assume two segments), subject to the condition that it has sufficient market power. Let us assume that there are two groups of customers which differ in terms of the reservation price (i.e. the maximum amount they would pay for a specific product) and the price elasticity of their demand. Chart 3a shows the price at which market equilibrium is achieved in the segment with the lower reservation price (the point at which the demand curve D crosses the y-axis) and with relatively elastic demand (reflected by the lower slope of D). This setting is typical of a market with lower-income consumers,

who search more thoroughly for the best price and whose demand is therefore more elastic than those of others. In a monopoly market, market equilibrium is given by the optimality conditions that the marginal costs MC (which are assumed to remain constant here) equal the marginal revenue MR. In the case at hand, which is based on a numeric example in Helmedag (2001), the firm sells quantity q_1^* of 60 units at a price p_1^* of 35 to optimize its profit. Specifically, it would earn a profit (shaded orange in the chart) of 900 money units ($PR_1^* = (35 − 20) \times 60 = 900$) in this market. Let us assume further that the same (monopoly) supplier (facing the same marginal costs) offers its product in a second market with typically higher-income consumers characterized by a higher reservation price and lower demand elasticity. In this segment, market equilibrium is achieved already at a quantity q_2^* of 40 units but at a much higher price p_2^* of 60 (chart 3b). This yields a profit of 1,600 money units ($PR_2^* = (60 − 20) \times 40 = 1,600$). In total, the firm would therefore earn 2,500 money units (900 + 1,600).

If we compare this setup with a situation in which the firm is not in a position to segment its market (chart 3c, which results

Chart 3a

Equilibrium in Market Segments with ...

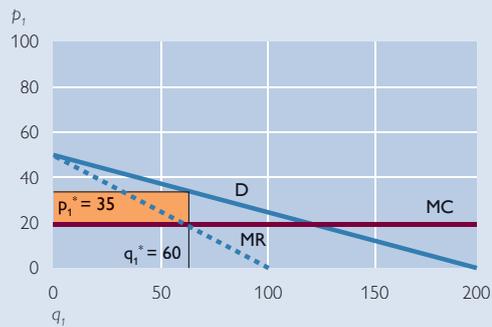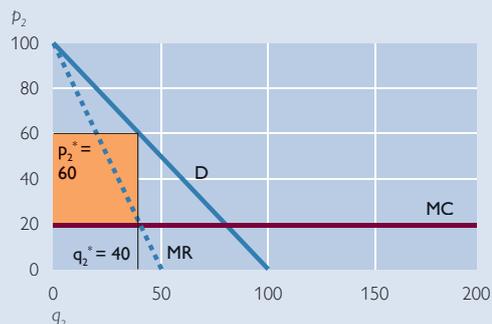**... a Small Reservation Price and Relatively Elastic Demand**

Chart 3b

**... a Higher Reservation Price and Relatively Inelastic Demand**

from the horizontal aggregation of the two segments), the monopoly supplier would maximize its profit by offering 100 units (Q*) at a price of 40 (P*). In this case, it would earn 2,000 money units (PR* = (40 − 20) x 100 = 2,000), which is less than what it would have made in a segmented market. Therefore, the company will try to segment its market and serve the different segments individually, provided the conditions for doing so are met.

In the case at hand (where the market segments are roughly equally large), the average price level is higher with segmented markets than in the single market. However, this is not a general result and will depend on the relative sizes of the segments and on the relationship between demand elasticities and reservation prices. If the relationship were four to one, i.e. more like that of a mass market to that of a luxury market, the average price level of the segmented markets, would, ceteris paribus, match that of a single market.

Chart 3c

Single Market
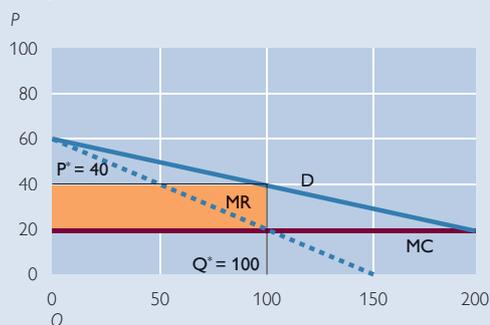
Source: OeNB, based on Helmedag (2001).

2.2 Customer Loyalty Programs: Creative and Popular Solutions

The consumer perception of price differentiation is dominated by the microeconomic rather than the macroeconomic perspective. Retailers use different types of discounting to provide consumers with added incentives to buy their products. Customer loyalty programs are one of the most important marketing instruments that retailers have developed. They come in many different forms, such as discounts for paying cash or for buying larger quantities, trade credit or repeat customer discounts, personalized or limited-time discounts, bonus point schemes or coupon systems, or benefit cards.[4]

Box 3

Customer Loyalty Programs: Customer Clubs and Loyalty Cards

Customer clubs are meant to create loyalty by providing a platform for recurrent exclusive offers and benefits for members. There are two types of customer clubs: open clubs, and limited clubs. As the names imply, limited customer clubs come with entry conditions (customers have to pay to become a member or need to commit to spend a minimum amount of money), whereas open clubs are open for everyone. The inhibition to join an open club is low, and acceptance rates are high. Essentially, customer clubs seek to build customer identification (i.e. an emotional relationship) with a particular company and its services. Customer clubs project values, such as status and prestige, and create a sense of belonging. They are widely used in retailing, since there are no or almost no barriers for joining and since they may increase the purchasing frequency of occasional customers (through a higher interaction frequency) (Wirtz, 2009).

Loyalty cards serve as proof of membership in a customer club. They are meant to strengthen the emotional bonds with customers, promote brand awareness and offer (mostly financial) rewards. Companies use loyalty cards to collect and analyze information on transactions in order to gain insights into the purchasing habits of their clients.

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[4] The Austrian consumer magazine "Konsument" published a detailed overview of the incentives individual Austrian retailers offer under their customer loyalty programs in its June 2009 issue.

Companies may offer personalized discounts, limit discounts to particular products, run sales only on particular days, or may require clients to spend a given amount or purchase a particular quantity in order to become eligible for a discount. Since the Austrian Discount Act was suspended in 1992, price discounts have not been subject to any legal constraints.[5] Any abuse of pricing power can, however, be addressed under competition law. Apart from serving as a price differentiation tool proper, large-scale promotional discounts are also used to stimulate consumer spending in periods of subdued economic activity. In Austria, for instance, retailers responded to the economic crisis that was emerging in late 2008 by frontloading clearance sales and increasing markdowns, as a result of which Christmas sales went well.[6] This shows that adjusting pricing strategies may boost consumption and fuel economic growth.

The different retail industries are highly creative in acquiring clients, as myriads of marketing brochures, advertisements and commercials or direct mailing campaigns show. How successful buyers are in getting special conditions depends on a number of factors, such as on the product (or brand) they choose, whether they are regular customers or not, or how good their negotiating skills are. Some industries, such as electrical appliance retailers, DIY retailers and furniture stores or the car industry tend to grant substantial personalized discounts on the purchase of durable goods.[7] Industries with a lower purchase frequency typically grant smaller discounts, but they regularly mark down different products or product ranges.

2.3 Customer Retention: A Win-Win-Situation for Retailers and Their Clients?

Customer loyalty programs help retailers increase their revenue, essentially by extracting consumer surplus from buyers, gaining new customers through word of mouth recommendation, strengthening existing customers' intentions to return and managing to cross-sell[8] them additional products. Customer loyalty programs also help enlarge the customer base, i.e. they reduce the cost of acquiring new customers, which is very high in saturated markets. Through such programs, it is possible to increase sales revenue and market shares even in markets with (almost) perfect competition. Retailers will price the loyalty discounts they grant into their net sales prices, along with the markup over costs and any discounts they grant for swift payment.

Individual clients benefit above all from the financial rewards, value-added services and other bargains that come with joining a customer loyalty program. The "prospect of saving" thus created prompts customers to go shopping to be able to benefit from the string of customized offers.

Participation in such programs is often conditional on supplying personal data. Access to customer data is a big

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[5] *A few items continue to be regulated, such as tobacco products, on which discounts are forbidden under the Tobacco Tax Act of 1995 (Article 5 paragraph 6) and under the Tobacco Monopoly Act of 1996 (Article 8 paragraph 5).*

[6] *See KMU Forschung Austria (2009) and a report on www.oe24.at (December 6, 2008) entitled "Rabattschlacht heuer schon weit vor Weihnachten" ("Retailers Discounting Aggressively Way Ahead of Christmas This Year").*

[7] *For instance, discounts to customers who (re)furnish their homes, buy a new car or spend large amounts on electrical appliances or DIY home products. Durable consumer goods tend to have a low purchase frequency, so that discounts, which may be quite high in some instances, can be negotiated only at large intervals in those product segments.*

[8] *Refers to the practice of suggesting related products or services to a customer.*

asset for retailers, since these data help them sell more and spend less: Once the individual customers can be identified, all their purchases (i.e. their buying patterns) are tracked and combined with the data they supply on registration. The detailed customer profiles created on the basis of these data save the retailers heavy expenses on comprehensive market analyses. Longer purchase histories might tell retailers something about the price a particular customer is willing to pay and the level beyond which he or she will stop buying a particular product. Such information allows retailers to individualize their offers.

At the same time, customer advocacy groups are making an effort to raise consumer awareness for the side effects of customer loyalty programs, arguing that those programs come with a catch and voicing privacy concerns. Austria's Federal Ministry of Labour, Social Affairs and Consumer Protection (2007) specifically issued a folder to warn consumers against the risk that the data they supply when registering for a loyalty program may be abused ("Kundenkarten – bezahlt wird mit Daten" = "customer cards – you are paying with your data"). The Austrian consumer magazine "Konsument" (issue 6/2009) arrived at a very critical assessment of customer loyalty programs as a result of evaluating 27 different loyalty cards, alerting customers to the fact that "your shopping cart is spying on you" and claiming that the rewards are limited.

Yet customer loyalty programs are not without risks for the retailers, either: When they seek to retain customers above all by offering them discounts,

they run the risk that customers will readily adjust to the discounts and stop buying products unless they are marked down, while the purpose of promotional prices is of course to increase sales revenue. Given that more and more retailers offer loyalty programs and given that the majority of customers participate in several programs at the same time, customers might easily switch suppliers when they are no longer satisfied with the conditions of a particular company. Moreover, the costs of implementing and running customer loyalty programs are high. Last but not least, inactive cardholders, who make little use of their cards but still generate administrative costs, give rise to tracking costs (Elfers and Ulrichs, 2006).

3 Discounting Is Widespread in Austria

3.1 Retailers Are Reluctant to Disclose Data on Discounting

In April and May 2010, the Oesterreichische Nationalbank (OeNB) conducted an anonymized survey among Austrian retailers in order to gain quantitative and qualitative insights into their discounting practices. All in all, 98 retailers operating in 16 different industries were included in the survey. On the one hand, we contacted retailers with a strong geographical presence who are widely known and who have high market shares in Austria. On the other hand, we addressed above all firms whose customer loyalty programs are indeed representative, i.e. which apply uniform conditions to all of their customers.[9] Other areas, such as particular service industries (e.g. tourism, transport, leisure, sports, hairdressers,

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[9] With regard to the impact of retail discounting on inflation measurement, we were also interested in establishing the amount of cash or other discounts granted outside the framework of customer loyalty programs. Therefore the questionnaire (see annex) also included questions on such discounting practices.

communications and cultural services), in which discounts are offered selectively and on a case-by-case basis, were not part of the survey. The same holds true for car retailers, who are known to provide a wide range of customized discounts.

In the end, 20 retailers operating in 11 different industries completed and returned questionnaires to the OeNB, which corresponds to a response rate of 20%, but is more or less what other institutes elicited in surveys on the same topic (Elfers and Ulrichs, 2006). While the informative value of the results is thus limited, they do provide some essential insights into retail discounting.

While all toy retailers whom we contacted returned the questionnaires, the response rate was lower but still above average in the motor vehicle spares and accessories business (40%), for gardening retailers (40%), furniture stores (36%) and home and DIY retailers (33%). In contrast, the response rate was very low among clothing and textile retailers (13%), electrical appliance retailers (14%) and in food and beverage retailing (14%).[10]

3.2 Retail Discounting Practices Vary Strongly in Austria

3.2.1 Retailers Prefer Sales and Coupons

The most common forms of retail discounting in Austria are sales[11] and coupons, followed by loyalty discounts, quantity discounts and cash discounts.[12]

By comparison, limited-time discounts[13] and personalized discounts are less widespread. With the exception of loyalty discounts, which are conditional on participation in customer loyalty programs, all kinds of discounts are not necessarily linked to customer loyalty programs (chart 4).

Sales promotions – above all season sales and sale days – are the most common form of discounting both under customer loyalty programs and outside such programs (reported 42 versus 30 times[14]). Coupons are more important for loyalty cardholders than for nonholders. The same holds true for cash discounts, which were reported twice as often when linked to customer loyalty programs. When cash discounts are specified further (chart 4), we see that loyalty card-based discounts are also higher: Cash discounts of between 3% and 10% or above 10% are available more or less only to loyalty cardholders. In contrast, the results are fairly balanced for quantity, personalized and limited-time discounts.

3.2.2 More Than One-Third of Customers Participate in Loyalty Programs, Contributing One-Third of Sales Revenue

On average, 36% of all customers participate in some kind of customer loyalty program. This percentage masks significant variations across industries, however. Drugstores and cosmetics retailers reported shares of more than

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[10] *This is why we do not provide tables or charts detailing the results for the individual industries.*

[11] *Sales include sales on selected products (e.g. 10% off on pears), sale days and sale weeks for a particular product range (e.g. 10% off on fruit), bargain days/weeks for the entire range of products (e.g. a 10% discount on all products) and season sales (e.g. winter clearance sales).*

[12] *The questionnaire included the following response options for cash discounts: Up to 3%; between 3% and 10%; more than 10%; and VAT-free days (e.g. Saturdays).*
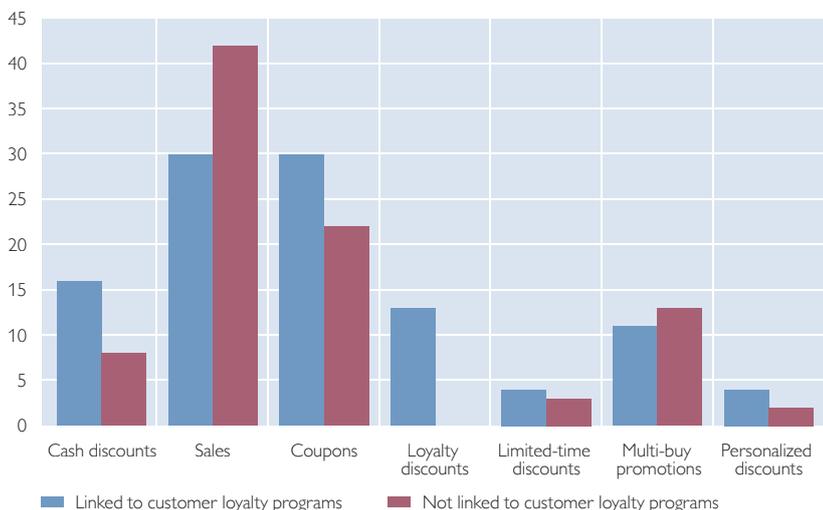
[13] *Limited-time discounts include discounts on perishable products (e.g. on fruit after 5 p.m.), happy hours, evening discounts and the like.*

[14] *The questionnaire provided for multiple responses within the individual categories (e.g. special offers) (see annex).*
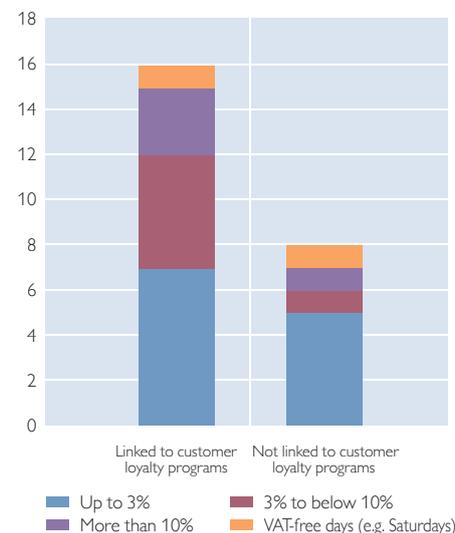
Chart 4

Retail Discounting in Austria

Discount types

Retailer responses

Cash discount pattern

Retailer responses

Legend (Discount types):
- Linked to customer loyalty programs
- Not linked to customer loyalty programs

Legend (Cash discount pattern):
- Up to 3%
- More than 10%
- 3% to below 10%
- VAT-free days (e.g. Saturdays)

Source: OeNB.

60%, and clothing and textile retailers some 50%, as did, more or less, furniture stores and toy retailers. In industries selling big-ticket items or durable consumer goods (such as motor vehicle accessories or electrical appliances), retailers reported much lower shares of loyalty cardholders.

The share of corporate sales revenue attributable to customer loyalty programs is another indicator of the importance of such programs. In our survey, we found this share to total 33% on average across all industries. As was to be expected, this share is correlated relatively strongly with the percentage of clients who participate in loyalty programs in the first place. This is true above all for drugstores, cosmetics retailers, clothing and textile retailers, furniture stores and gardening retailers. DIY retailing is an exception, with loyalty cardholders contributing double their share in the client base (20%) to overall sales revenue (40%). This might imply that loyalty cardholders tend to patronize "their" shops more

readily, and/or that they tend to spend more than customers who have opted not to participate in the loyalty programs.

The reverse is true for toy retailers: As many as 42% of their customers are loyalty cardholders, but they contribute only close to 21% of sales revenue. This might be explained by the fact that numerous customers fail to show their cards when making instant purchases, so that those purchases will not qualify as loyalty program purchases. Another possible explanation is that parents whose children have outgrown toys continue to hold their cards but buy less.

Furthermore, retailers reported that they granted discounts on as many as 32% of their products on average, both under customer loyalty programs and outside such programs. Broken down by industries, the figures again vary considerably. Gardening retailers sell three times as many of their products to loyalty cardholders at a discount than to nonholders. Drugstores grant discounts on 50% of their products,

but they limit those discounts to loyalty cardholders. The industries which essentially treat loyalty cardholders very much like nonholders include electrical appliance retailers (who offer discounts on 85% of their products to both groups), furniture stores (40%), clothing and textile retailers (10%) as well as DIY retailers (10%).

3.2.3 Loyalty Cardholders Tend to Get Higher Discounts on Average

While discounts are commonly granted both under customer loyalty programs and outside such programs, the companies participating in our survey reported that they gave cardholders somewhat higher discounts than their other customers (6.6% versus 4.7%). We found that furniture stores and electrical appliance retailers granted the highest discounts to cardholders, whereas drugstores and cosmetics retailers as well as DIY retailers were less generous.

### 3.2.4 Discount Pricing Has Become More Important in Recent Years

Macroeconomic developments in recent years (inflation spikes in the food and energy sectors in 2008, the economic and financial crisis in 2008 and 2009, deflationary trends in the summer of 2009) may have prompted businesses to change their pricing conditions. Against this backdrop, we asked respondents to indicate whether the importance of discount pricing has changed in recent years.

Chart 5 shows that the importance of the various types of discount pricing has increased rather than decreased in recent years. When we add up the answer categories "increased sharply" and "increased," we find customer loyalty programs to have gained more than 60% in importance across industries, while the relevance of sales and coupons has risen by 50%. Some 35% of

Chart 5

Changes in Discount Pricing in Recent Years

Relative share of responses in %

Legend: Increased sharply / Increased / Remained unchanged / Decreased
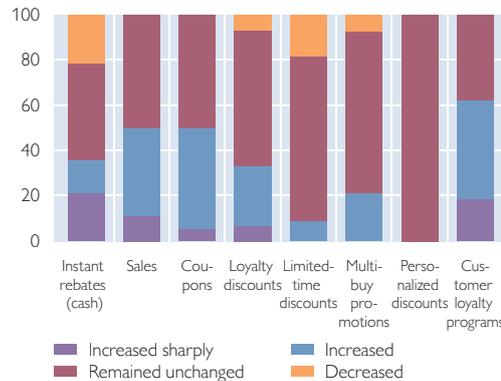
Source: OeNB.

companies reported that they had granted instant rebates more often, whereas more than 20% indicated that instant rebates had become less widespread. All other types of discounts, namely loyalty discounts, multi-buy promotions, limited-time discounts and personalized discounts, have remained broadly unchanged.

3.2.5 Discount Prices Change More Often than Original Prices, with Heterogeneous Patterns across Industries

Retailers tend to vary their discount amounts, their markdown percentages and the terms of their customer loyalty programs at (fairly) frequent intervals. They react increasingly faster to changes in competitiveness or costs. The survey results show a mixed picture: While 17% of the responding firms reported adjustments of discounting practices more than once a week and 6% to do so once a week, 11% reported that they made such changes only once a quarter or every six months, with 33% keeping their conditions unchanged even longer. 22% reported that they adjusted discount pricing on a monthly basis.

This confirms the proposition made above that discount pricing is a dynamic element of pricing. Expressed on a daily basis, some 11% of price discounts are adjusted every day on average; in other words, the discount patterns are adjusted 32 times a year, or every other ten days on average.[15]

This is a higher frequency than the rate at which the prices compiled by Statistics Austria as input for calculating the CPI/HICP change on average, which Baumgartner et al. (2005) established at being in the range of 15% a month. Of course, the data sets on which these figures are based – Statistics Austria's HICP statistics and our business survey – are not comparable for numerous reasons, such as the low response rate of firms or the monthly frequency at which prices are compiled for the HICP. At the same time, changes in discount pricing appear to be a frequent yet largely neglected source of price changes, which show actual retail pricing to be more dynamic in Austria than the current measurement practices imply.

As a case in point, electrical appliance retailers adjust their discount conditions every other day on average, toy retailers do so roughly once a week, whereas furniture stores, sports retailers and gardening retailers change their terms less than once every six months. When we look at the price discount methods of choice of industries with sticky discount pricing, we find them leaning disproportionately heavily to loyalty discounts and rather rarely to sales. In other words, loyalty discounts appear to be a pricing tool that is adjusted rather rarely, while all other types of bargain prices are adjusted more often.

3.2.6 Changes in Discount Pricing Are Mostly Driven by Company-Specific Factors

Among the reasons why companies change their discount pricing strategies, company-specific reasons were cited much more often than industry-wide events or macroeconomic developments (table 1). Changes in a company's competitive conditions (including changes affecting its competitors) drew the highest number of answers, followed by purchasing conditions and a change in the company's costs. Seasonal factors (such as clearance sales or other regular sales) were also rated highly, but not at the top of the list. In the mid-ranks, we find industry-specific shocks, whereas the bottom ranks include macroeconomic factors, such as the economic and financial crisis, high inflation rates and cyclical conditions in general as well as the income situation of consumers.

Table 1

Main Reasons for Adjusting Discount Pricing Practices

	Mean scores[1]
Changes in the company's competitiveness	3.4
Wholesaling conditions	3.2
Changes in costs	2.8
Seasonal conditions (regular changes in conditions over the year)	2.5
Industry-specific shocks	2.2
Economic and financial crisis	1.7
High inflation	1.6
Cyclical developments	1.5
Increases in customers' incomes	1.3
Reductions of customers' incomes	1.2
Other reasons: clearance sales	0.2

Source: OeNB.

[1] The calculaton is based on the following codes assigned to possible answers: very important = 4, rather important = 3, rather unimportant = 1, unimportant = 0. The results are mean scores per category and are to be interpreted only in an ordinal way.

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[15] To establish those frequencies, we converted the figures to daily frequencies based on the assumption of 300 business days a year. Thus, the response "weekly" can be expressed on a daily basis by dividing 52 by 300, which produces 17.3%.

3.3 Loyalty Card Holders Typically Hold Five Cards – Financial Rewards Are the Key Motif

In 2008, some 30 million loyalty cards were reported to have been issued in Austria.[16] A survey conducted by A.C. Nielsen in March 2008 provides detailed insights into loyalty card ownership in the Austrian food, drugstore, DIY, furniture and shoe retail industries. The results show that three out of four persons shopping in such stores have a loyalty card. Holders of customer loyalty cards tend to have five cards on average, and they tend to have more than one card for each industry, which shows that customers tend to patronize more than one supplier. Loyalty cards issued by food retailers and drugstores are most popular by far (chart 6); 70% and 67% of all customers, respectively, hold a card.

A MAKAM survey of April 2008 shows loyalty cards to be on the up and up: While in 2005 only 65% of all shoppers polled in Austria reported that they owned at least one loyalty card, as many as 86% customers did so by 2008.

The survey by A.C. Nielsen also provided insights into the motifs of holding loyalty cards, and identified the prospect of financial rewards as the most important incentive by far: We have quantified this for the two industries with the highest share of loyalty cards, namely food retailers and drugstores (chart 7): Two-thirds of respondents cite the prospect of saving money through discounts as their main motif for holding cards. The runners-up (both at 15%) are incentives to earn and redeem bonus points and exclusive shopping offers for club members, followed by instant rebates on one's purchases. All other benefits (such as coupons, giveaways, club magazines, enhanced warranty conditions) are considered much less important.

The influence of customer loyalty card ownership on shopping habits is less impressive but nonetheless significant: As many as 25% of cardholders reported more frequent shopping trips to shops that reward them for patronizing them (and 8% reported much more frequent shopping trips).

Customer loyalty cards are widespread in Germany as well. Dialego (2004), an Aachen-based research institution, reports that close to 90% of

Chart 6

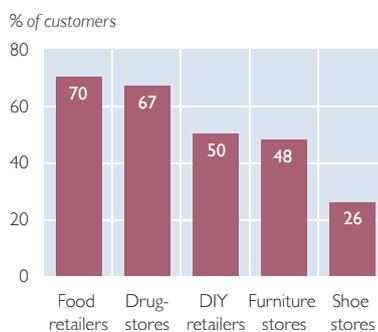**Loyalty Card Ownership in Austria and in Germany**
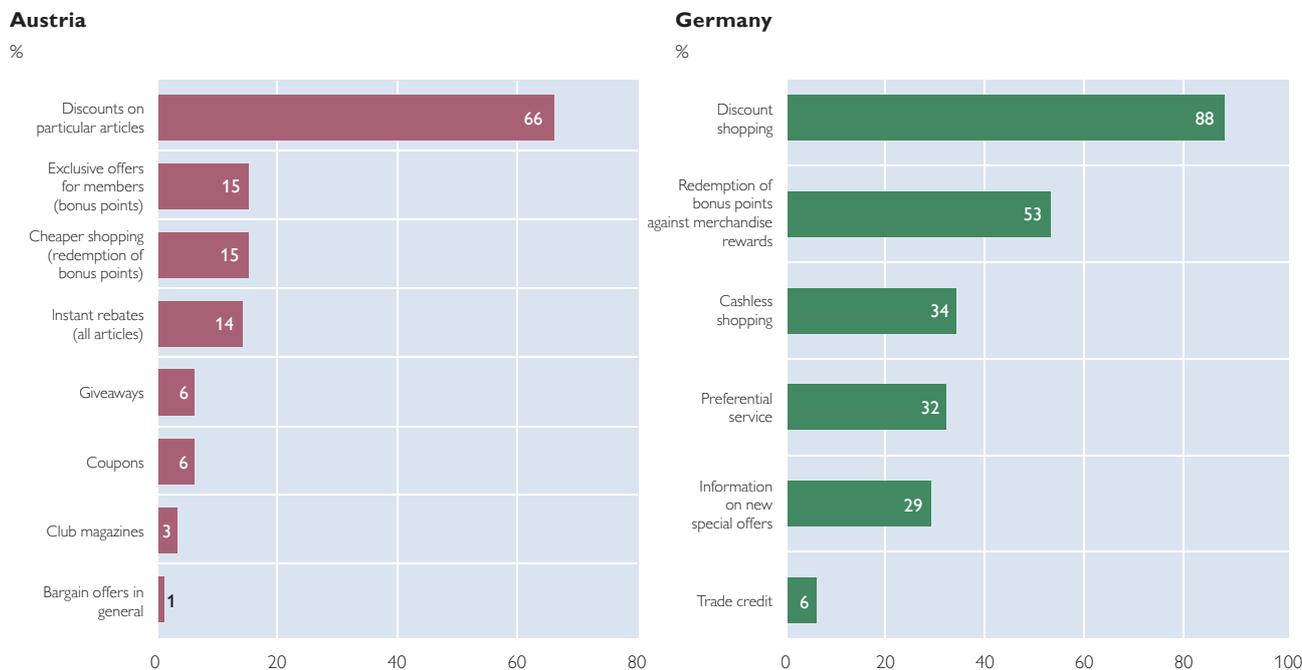
Number of loyalty cards
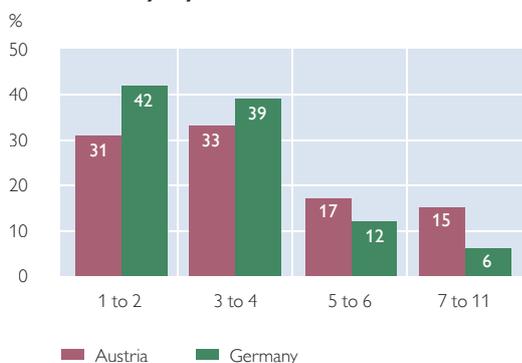
Retail industries in Austria

Source: Austria: A.C. Nielsen (2008); Germany: Dialego (2004).

[16] As reported by the Austrian daily "Kurier" on December 15, 2008.

Chart 7

Which Incentives Do I Expect a Loyalty Card to Offer?

Austria
%

Discounts on particular articles	66
Exclusive offers for members (bonus points)	15
Cheaper shopping (redemption of bonus points)	15
Instant rebates (all articles)	14
Giveaways	6
Coupons	6
Club magazines	3
Bargain offers in general	1

Germany
%

Discount shopping	88
Redemption of bonus points against merchandise rewards	53
Cashless shopping	34
Preferential service	32
Information on new special offers	29
Trade credit	6

Source: Austria: A.C. Nielsen (2008); Germany: Dialego (2004).

all Germans owned at least one loyalty card in the early 2000s. A Commerzbank study (Elfers and Ulrichs, 2006) put the number of cardholders at some 100 million in Germany, some 30% of which were estimated to be inactive cardholders.

Just like Austrian shoppers, German households value above all the financial rewards of loyalty cards (90% response rate; see chart 7). The Dialego survey also shows that loyalty card ownership rises with age. Interestingly, customer satisfaction with the benefits that come with holding loyalty cards of particular firms are consistently high, even though the German consumer advocacy agency Stiftung Warentest showed loyalty card-based discounts to lie within a moderate range, namely between 0.25% and 3% (Kaupmann, 2009).

4 Inflation Measures Partly Reflect Discount Pricing

Discount pricing is also an important consideration in measuring inflation, as inflation measures need to be representative of actual prices to provide a reliable yardstick. The question of whether discounts granted to individual customers, say, at a furniture store or discounts on food purchases or a certain percentage off on a car purchase are accounted for in the inflation rate is difficult to answer. Identifying the price charged to loyalty cardholders and quantifying its relative weight in the overall market price is a special challenge in inflation measurement. In an extreme scenario, if a good or service is purchased only at the reduced price and very many consumers hold a loyalty card, the reduced price is the representative price, i.e. the price that should for all intents and purposes be used to measure inflation. However,

the move to fully adjust inflation measurement for retail discounting would produce only a one-off effect – i.e. inflation would be lower in the year following this adjustment. Since the rate of inflation measures the change in prices over time and not the level of prices, this cross-sectional study cannot provide an answer to the question of how fully accounting for discounts would affect inflation. To this end, detailed analyses would be required on which types of discounts change how much, and on how these changes affect the HICP depending on the weights used in the basket of goods and services.

4.1 HICP Reflects Various Discounts

The indicator commonly used to measure the change in households' purchasing power is the consumer price index – traditionally the CPI mainly for national purposes and, following harmonization at the EU level, also the HICP, which is the Eurosystem's target indicator for monetary policymaking.[17] Users of consumer price statistics generally appreciate the high quality of inflation measurement as well as the reliability and timeliness of the CPI and the HICP. These indexes have particular advantages:

– The methodological framework integrates key theoretical and empirical research results;
– The basket of goods is representative;
– Very detailed data are available frequently and rapidly;
– Biases in measuring inflation due to quality changes are remedied frequently; and
– Revisions are rare.

Despite all the progress made up to now, some factors which have always preoccupied researchers involved in price index theory have an impact on the degree of precision with which inflation can be measured. These factors include the frequency of updates of the expenditure weight in the basket of goods and services, quality adjustments and the coverage of discounts. On principle, the conceptual design of inflation measurement is such that both the monthly price sample (consisting of 40,000 individual prices in Austria) and the composition of the basket of goods and services reflect the kind of temporal, geographical, demographic, volume-based and product (or service)-based variations that are differentiated in theory (e.g. chart 2). To this end, volume-based discounts, special sales, (season) sale prices and some discriminatory prices (prices applicable to specific groups of individuals and households) are taken into account (table 3). The coverage of discounts is generally very difficult, however, given the lack of information and reliable data; therefore, not all price strategies in the market can be adequately captured. Table 2 provides an example of multidimensional price discrimination in a breakdown of the Austrian HICP coverage of the price range of public pool admission prices (as currently covered) and spa admission prices (as scheduled to be covered in 2011).

The current practice in inflation measurement is to take the admission price applicable to the largest group of customers as well as the rate charged for children and the rate for senior citizens; all other price categories are neglected for lack of representativeness. This concept is unlikely to change in the new basket.[18] While spa admission

[17] The following analysis refers only to the HICP coverage of retail discounting.
[18] The new basket, which will apply to inflation measurement from 2011 to 2015, is currently being defined on the basis of the consumer survey 2009/10.

Table 2

Multidimensional Price Discrimination: HICP Coverage of Public Pool Admission Prices and Spa Admission Prices

Price discrimination by factor	Possible price ranges	Prices currently covered by the HICP: public pool admission prices	Prices scheduled for HICP coverage from 2011: spa admission prices
Time	Annual pass, semiannual pass, three month pass, day ticket, half-day ticket, three-hour ticket Evening, morning and weekend rates	Single admission for one adult including locker use (most common rate)	Most common admission prices
Individual	Discounts for children, students and seniors; family passes	Single admission for children under 15 including locker use Single admission for seniors including locker use	Breakdown similar to that for pool admission prices
Amount	Prepaid card, in the case of a two-hour card, a discount of EUR … applies to every additional hour	No	No
Service	Only swimming pool; swimming pool + sauna + spa facilities; package deal	No	No

Source: OeNB, Statistics Austria.

prices will be covered as a new category of expenditure relevant for inflation measurement, only a narrow range of rates will be taken into account, as in the case of pool admission rates. In other words, the highly heterogeneous price structure that is typical of spas – Römertherme Baden, for instance, has nearly 60 different rates[19] – is largely unaccounted for in the price index. While the price ranges are not quite as complex in other service categories, they are common for e.g. tourist travel passes, various sports and cultural event services, public transport fees and even insurance premiums; as a rule, again, prices that are sufficiently representative are (partly) reflected in the HICP.

4.2 More Detailed Information about the HICP Coverage of Discounts

The prices used in the HICP are the prices paid by households to obtain individual goods and services in monetary transactions.[20] The key point is that coverage in the index requires a monetary transaction – that is, an economic flow during which a good or service passes to the buyer and money to the seller – and that the prices used in the HICP are the purchase prices (adjusted for any discounts). The treatment of discounts is delineated in a Council Regulation dating from the year 2000.[21] This regulation stipulates that purchase prices used in the HICP shall in general take account of reductions in prices of individual goods and services if such reductions:

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[19] *Many of these rates are not representative enough to warrant coverage by the price index.*

[20] *See Council Regulation (EC) No 1687/98.*

[21] *Commission Regulation (EC) No 2602/2000 of 17 November 2000 laying down detailed rules for the implementation of Council Regulation (EC) No 2494/95 as regards minimum standards for the treatment of price reductions in the Harmonised Index of Consumer Prices.*

— can be attributed to the purchase of an individual good or service;

— are available to all potential consumers with no special conditions attached (nondiscriminatory);

— are known to purchaser at the time they enter into the agreement with the seller to purchase the product concerned; and

— can be claimed at the time of purchase or within such a time period following the actual purchase that they might be expected to have a significant influence on the quantities purchasers are willing to purchase.

Moreover, the Consumer Price Index Manual (ILO et al., 2004), which was compiled by six institutions,[22] and Eurostat (2001) provide detailed instructions on how to cover various types of price discrimination and discounts (table 3). The general approach is that the HICP does not reflect cases of price discrimination in which a limited group of consumers has price privileges or in which favorable conditions are not directly assignable to a particular good. Hence, the individual price advantages that come with customer loyalty programs are not covered, whereas some price advantages not linked to customer loyalty programs are. Price surveys have been designed to document all nondiscriminatory discounts and all discounts which apply to every customer or all purchases of a specific good. Sale prices are one such case in which coverage is quite widespread. Unlike other types of discounts, sale prices are more frequent outside of customer loyalty programs than in customer loyalty programs and are thus well covered. According to Schindlar (2010), some 8½% of all prices covered in the Austrian HICP are discounts; the share is, however, noticeably larger in individual sectors (shoes and clothing: 24% of all prices covered are sale prices).[23] Yet these data do not include HICP prices of those items where price discrimination is an inherent part of the product, as is the case e.g. with insurance premiums, where prices for different age categories and gender-specific prices are covered. The treatment of recreational services is similar – in the case of airline tickets, for instance, last minute travel deals or early bird discounts are covered as separate categories.

Moreover, the electronically scanned prices of the regular and discount prices of two large companies which together represent a large share of the electrical appliance retailing market feed into the HICP. Although retail scanners are the most useful source of retail discounting data,[24] they are not helpful when it comes to establishing price reductions that do not apply to a particular good, such as discount coupons for a percentage off on an entire bill.

A similar coverage problem arises in the event of inducements in form of extras (Eurostat, 2001) such as the incentive of getting a highway toll sticker for free when taking out a newspaper subscription. While both products are covered in the basket of goods, they are classified under different COICOP

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[22] ILO, IMF, OECD, Eurostat, UNECE, The World Bank.

[23] Another source with similar data provided slightly different results. The share of price promotions – sale prices and other bargain prices – in food and drug retailing came to 29.3% in 2009 according to A.C. Nielsen (2010), up from 20.8% in 2000.

[24] Some European statistical offices already use scanner data extensively, e.g. those of Norway, the Netherlands and Switzerland. In particular the Dutch Centraal Bureau voor de Statistiek has been using scanner data provided by six supermarket chains for the CPI since 2010 (van der Grient and de Haan, 2010).

Table 3

HICP Coverage of Selected Discount Prices

Type of Price (Discount)	HICP Coverage Yes/No	Reason
Special sale prices	Yes	As a rule, such discounts are covered, because they are: – valid for a limited time – apply to all customers – apply to particular goods or services
Opening prices	Conditional yes	Such prices are the same for all customers, and products are available in the future (at the regular price); they are a representative price in the index
Clearance and closure sales, end-of-season sales	Yes	Other retailers sell the goods at regular prices; all customers receive the same discount on the same items; prices apply to particular items
Damaged or defective goods	No	The quality of these goods is lower; they are not expected to be available in the future
Discontinued goods	No	The prices of follow-up models are covered, provided the new models are already on the market
Time-dependent discounts		
Goods approaching the use-by date	No	The quality of such goods is lower and the goods will not be available in the future
Happy hours, evening sales	Yes	Lunch specials, e.g. every Monday through Friday from 12:00 noon to 2:00 p.m., are covered because they are available to all patrons during busy hours
	No	Evening sales are not included because they take place rarely (e.g. once a month) and for a very limited time
Early bird discount, preseason sale	No	Early bird prices are covered if they represent a significant market share; applies to last-minute booking as well
	Yes	Post- or preseason products (e.g. tires): discounts apply for every consumer and for a particular product (not covered: discounts for individual consumers)
Credit and payment agreements	No	Credit costs are not consumer prices – interest, service charges and surcharges for nonpayment or late payment are not covered
Interest-free or interest-bearing loans for the purchase of a consumer durable (e.g. a car)	No	Represent a credit and are thus not suited to coverage
Discounts in the form of giveaways	No	Discounts are not covered if the giveaways are minor. If the market value of the give-away is known, it can be deducted and added again after the free giveaway period ends
x units at a lower price than a single unit	Yes/no	Borderline case. These discounts are covered if the good involved is significant and if both x units and single units are common (e.g. construction material)
x free for the price of y	No	y is routinely covered, x is not (because x is an insignificant good). Therefore, such discounts are not covered
Rebate coupons earmarked to specific goods	No	Not covered as a rule
	Yes	Such rebates are covered if all potential customers can take advantage of them where the good is sold
Discounts for particular types of household goods	No	Not covered if the terms differ among households
	Yes	Covered if a significant share of expenditure is associated with particular types of households
Senior citizen, student (university, school), and membership (e.g. labor union members) discounts	No/yes	Not covered unless the discounts apply to a significant share of expenditure exclusively for a particular group of persons (e.g. student aid, expenditure for senior citizens' residences, senior citizens' railroad ticket)
Discounts for members of organized groups (e.g. labor union members, staff council)	No	Discounts apply to particular individuals, not to everyone
Households with individual customer loyalty cards (purchased or issued free of charge) and discounts in particular stores (e.g. tourism cards)	No	Discriminatory prices that do not apply to all consumers. Discounts include price reductions for various club memberships (e.g. sports clubs, cultural associations, labor unions) and related services (cheaper admission tickets, cheaper vacation services, price reductions on individual services such as tours, city breaks, stays at health resorts, spa deals)
Subsidized rents	No	Are part of household income

Regular discounts or rebates	Yes	Are covered if applicable to particular products and for all consumers
Bottle deposit refunds	Yes	As a rule, regular deposits are subtracted from prices. Refunds that are made years after purchase (e.g. premiums for scrapping cars) and that do not help increase purchases are not covered
Irregular discounts/rebates	Yes	Irregular discounts are covered if they apply to a particular product for a particular period and thus have a significant effect on the amount sold
	No	Irregular discounts are not covered if they apply to particular customers and do not apply to a particular good or service
Retailer bonus program (various types)	No	Do not benefit all customers
Loyalty cards entitling holders to a discount of x% on purchase y	No	Do not benefit all customers, do not apply to a particular good
Incentive programs (e.g. car trade-ins)	Yes	Apply to a particular good and have a significant impact on the amount sold
Retroactive refunds (e.g. bonus refundable next year)	No	Do not apply to a particular good, have no impact on the amount sold because their effect is retroactive, apply to particular customers
Memorandum item: surcharges (e.g. tips)	Yes	*If a service surcharge is customary for the product, it is to be covered*
	No	*Variable tips (whose size is determined by individuals) are not covered*

Source: Consumer Price Index Manual (2004); Eurostat (2001).

(Classification of Individual Consumption by Purpose) categories, which gives rise to question of which category the package should be recorded in. Tourist travel passes are another example of a product that combines services from different COICOP categories. Strictly speaking, it would be necessary to track the price of all products covered by the tourist travel pass as a separate item in the price index or as a sample within an item in addition to the product proper, which is difficult and complicated. Therefore, items are only covered individually rather than in the form of packages.

4.3 Coverage of Typical Price Reductions in Inflation Measures

To illustrate the theoretical conventions in table 3, we will now provide some practical examples that statisticians are confronted with in measuring inflation. Moreover, box 4 analyzes the main features of an Austrian retailing chain's customer loyalty program on the basis of the promotional flyer and describes the most common applicable inflation measurement methods for each feature.

Instant rebate (e.g. 3% discount for holders of a customer loyalty card) on the total: As discounts are granted to individuals with loyalty cards, they are not covered in the HICP.

EUR 10 coupon for particular customers: Not all potential customers have a coupon, nor does the coupon apply to a particular product: the HICP does not cover the EUR 10 reduction.

Special offer of 50% off on cleaning agents (applicable to store A on the survey date; discount is not linked to loyalty card ownership): Every customer receives a discount on the given date. If the special offer price is applicable to the HICP survey period (as a rule, the second week of the month),[25] it is taken into account; if not – for example if the special offer is valid only on a Saturday – it is not covered. If the special offer is available only to loyalty cardowners, it is not covered in the HICP.

Retailer bonus program (annual bonus) of EUR 50: Customers receive a onetime bonus by mail that they can re-

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[25] *The prices of goods that vary strongly within a month and of seasonal goods such as fruit and vegetables are measured in the second and fourth weeks of a given month.*

deem on a purchase of their choice up to a certain deadline. As this bonus is given to holders of loyalty cards and does not apply to a particular good, it is not covered in the HICP.

Multi-buy promotions (e.g. buy one, get one free): Discounts are taken into account if the amount of the product roughly corresponds to the amount given as the household standard in the description of the good, for example two bottles of shampoo sized 250ml for the price of one bottle of 300ml. The discount price equivalent to the standard size is calculated and included in the HICP.

Scaled prices and bulk purchase prices (e.g. buy one bag of cement for EUR 10.29, buy one pallet (35 bags) of cement bags for EUR 9.98 a bag): Such discounts are reflected in the HICP if the product in question is customarily sold or demanded in this fashion. For instance, from 2011, pellets will be included as a new item in the index. The price of 4 tons of such fuel – the usual amount sold to a household – will be covered (but not discounts on this volume granted to individuals).

Car purchases with or without trade-ins: If customers purchase a car for EUR 30,000 and are given 8%[26] off the listed price, they may also have negotiated an all-inclusive price that covers special features such as light alloy wheels, a GPS system and better service

and guarantee conditions. The listed prices of 50 popular new car models with standard features and the prices of around 25 popular used car models are covered in the HICP. Car dealers frequently take used cars on a trade-in basis, which has no impact on the price of a new vehicle, as the trade-in is defined as a second-hand transaction and as the trade-in price is defined in bilateral negotiations, is intransparent and therefore almost impossible to determine.

Tourist travel passes: Travel passes, which are offered by many Austrian tourist regions, sometimes free of charge, give tourists access to a broad range of discounts (including price-discriminatory discounts) for recreational, cultural, sports and transport services. The price index includes a selection of services available under the tourist pass, under the prerequisite that these services are available to all households. The price of each service is covered separately. However, the package price of travel passes for a specific region is not included; such packages offer users considerable discounts compared to the regular price of each service purchased separately.[27]

Furniture and fixtures: The price index includes a number of prices of furniture, fixtures and other household items. The index sample includes large furniture stores, cabinetmakers' workshops and do-it-yourself shops with

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[26] *Individual discounts in automotive retailing are subject to many criteria and are therefore highly variable: These criteria include, for example, being a regular rather than a new customer, demand on the automotive market, trade-ins of used cars, the most recent sales figures of the retailer (if sales are slow, customers can expect bigger discounts), the car type and model, clearance sales.*

[27] *The Kärnten Card travel pass (for the summer of 2010) serves to illustrate the discounts available. The travel pass gives holders free admission to some 100 destinations, discounts for the services of over 50 partners, such as around 50% off on bus and train fares. One-, two- and five-week passes are available for adults and children; season passes, spring passes or summer passes are available for residents (with separate prices for adults, children and seniors). Use of the passes is unlimited. Some accommodation facilities offer their guests passes free of charge for the duration of their stay as an additional service. Discounts under the Neusiedler See Card travel pass are comparable. This travel pass is available free of charge from over 700 accommodation providers in Burgenland; cardholders may use most of the over 40 recreational facilities in Burgenland free of charge from April through October.*

standard products. As a rule, the index includes special offers but no additional individual discounts, special delivery terms or other purchase-related services such as assembly.

Insurance premiums: The index includes the premiums of representative accident, health, life, home and car insurance policies. Insurance companies also offer individual (gender or age) discounts that are also taken into account in measuring inflation; discounts negotiated with individuals are not.

Tourism and accommodation: Inflation measurement is based on the category prices stated in catalogues or in the Internet. However, individual additional benefits in the travel package, such as airport parking fees, rental cars or travel insurance, are not taken into account. Early bird bonuses or last minute deals are covered if they represent a significant market share. Also, special family packages at particular accommodation facilities are included, provided they apply across the board.

Senior citizen railroad passes: The index includes this instance of price discrimination, as it represents a significant share of expenditure.

Box 4

Long-Term Discount on 300 Items (Vorteilsaktion 300): An Austrian Supermarket Chain's Program for Loyalty Cardowners

The Basket of Goods and the Discounts

A large Austrian grocery retailer gives its loyalty customers a long-term discount on a basket of 300 products,[1] mainly brand-name supermarket items (food and beverage items, personal hygiene items). The discounts are available for a guaranteed period of three months. Most or all of the brand-name items in the basket are exchanged every three months, but the quality of the items and as a consequence the utility level for consumer is roughly the same.

The discount basket of early July until early October 2010 was analyzed on the basis of the related advertising flyer listing the original and the discount prices. The basket comprises some 230 individual products; the total of 300 products is the result of different varieties of one and the same product with the same price. The full price of the products in the discount basket of 230 goods is about EUR 840, which is the price that customers without a loyalty card have to pay. Loyalty cardholders, on the other hand, pay a total of EUR 640 EUR – savings of EUR 200 on the regular price. The baskets of the other quarters were found to have a similar profile.[2] Moreover, the typical purchasing frequency of the products differs – some are bought daily, some weekly, others monthly or at even greater intervals. In other words, customers can potentially enjoy discounts every time they go shopping. The products are selected in a way that different categories of consumers (e.g. age, income, marital status) benefit from discounted prices.
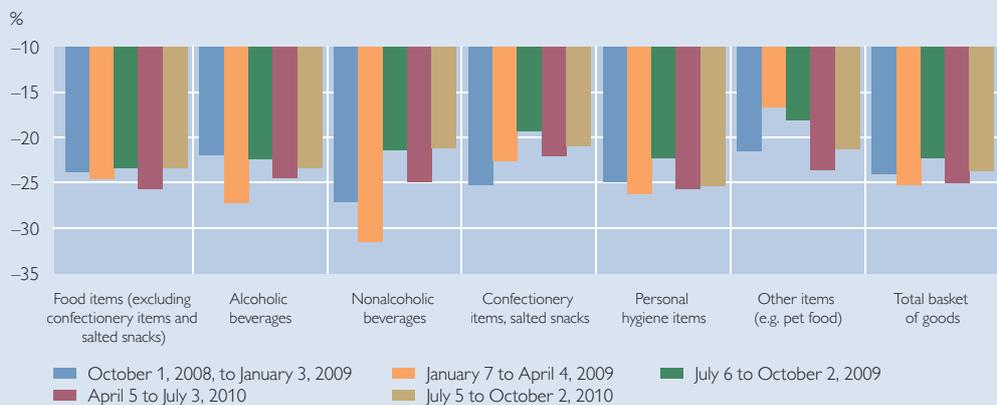
The following pattern for discounts emerges:
– The average discount for the entire basket varies marginally from one quarter to another, ranging between 22% and 25% (chart 8). The discounts themselves differ by up to ±10 percentage points from one product group to another (e.g. food items, alcoholic beverages, personal hygiene products).
– Discounts on individual products are broadly diversified within a range of 7% to 50%, with the lowest number of articles at these margins (6% to below 10% and above 40%; chart 9).
– A discount of between 20% and 30% applies to approximately 60% of the (generally low-priced) items (chart 9).

[1] This basket was expanded to include 400 brand-name articles from October 4, 2010; moreover, the retail chain guarantees that these are "best price" products.

[2] The advertisement brochures were available for five quarters (chart 8).

Chart 8

Long-Term Discounts on 300 Items: An Austrian Supermarket Chain's Program for Loyalty Cardowners

%

October 1, 2008, to January 3, 2009   January 7 to April 4, 2009   July 6 to October 2, 2009
April 5 to July 3, 2010   July 5 to October 2, 2010

Source: Authors' calculations based on the supermarket chain's advertising flyers.

Chart 9

Discounts on 300 Items under an Austrian Supermarket Chain's Program for Loyalty Cardowners in the Second and Third Quarters of 2010

Discount in Relation to Regular Price

Discount in %

Promotional Discount Patterns (300 Items)

Discounts of … % on … % of all items

April 5 to July 3, 2010   July 5 to October 2, 2010

Source: Loyalty cardowner program with discounts on 300 items of an Austrian supermarket chain from April 5 through July 3, 2010; authors' calculations.

How Would The Discount Basket Be Reflected in Inflation Measurement?

The basket of goods in the customer loyalty program (Vorteilsaktion 300) represents only a small share of the HICP basket, its representativeness for inflation measures is therefore limited. According to Statistics Austria, it covers at most 17% of the HICP basket. Moreover, the product-specific weighting in both baskets diverges sharply and some staples, such as milk, are not represented in the discount basket whereas other items, in particular (high-proof) alcoholic beverages, are included with a significant higher weight.

The HICP includes only those basket prices, if any, that are valid for customers without a loyalty card, not the discounted prices that apply only to customers participating in the loyalty program. Table 4 shows the impact that accounting for retail discounting would have on the inflation rate. The figures as such are of secondary importance in this respect; what is important is that the price averages reflecting discounting practices (far-right column) do put a new

*angle on the information that the standard inflation measures provide. The analysis is, how-
ever, based on the assumption that customers purchase only the products in the respective
basket, which is a rather unrealistic proposition.*

*The basket became slightly more expensive – 0.5% – for customers without a loyalty card
in the period from the third quarter of 2009 until the third quarter of 2010. In contrast, it
became 1.4% cheaper for customers entitled to discounts, partly because of the higher
discounts they tend to enjoy on average. As a result, the average aggregate price for both groups
of customers dropped by almost 0.4% year on year – which is roughly 1 percentage point be-
low the rate that would feed into the "official" inflation rate, i.e. 0.5%. At the same time, this
discrepancy relates to at most 17% of the HICP basket, which limits the inflation bias of the
discount basket under the customer loyalty program to roughly 0.1 percentage point.*

Table 4

Long-Term Discount on 300 Items: Impact on the Basket of Goods

Observation period	Customer without a loyalty card	Customer with a loyalty card	Discount for loyalty customers	Average price for both types of customers
	EUR		%	EUR
July 6 to October 3, 2009	833	647	−22.3	740
July 5 to October 2, 2010	836	638	−23.7	737
Change in %; change in percentage points (column 4)				
	0.45	−1.38	−1.41	−0.35

Source: Authors' calculations.

*The table shows two observation periods in which the average discount rises, so that the
basket becomes relatively cheaper. However, it must be pointed out that there may also be
periods during which the discount diminishes or stays unchanged which would reduce the bias
even more.*

5 The Effect of Consumer Loyalty Programs on Household Purchasing Power

The share of sales revenue generated through customer loyalty programs in Austrian retailing is quite large, averaging about one-third across all surveyed retailers (section 3.2). Considering that the discounts under such programs are larger than the discounts nonparticipating customers receive, consumers participating in loyalty programs should benefit from higher purchasing power. To the extent that discounts result only from participating in a customer loyalty program and are thus limited to a particular group of customers, they are not taken into account in the measured inflation rate, as elucidated in section 4.

Establishing the macroeconomic effect that price discrimination instruments in the form of loyalty programs have on the aggregate price level or on purchasing power is thwarted by the lack of data on the inflationary effect of price discrimination (section 2). Therefore, the quantitative effects we cite in this study are to be understood only as a gross effect (ceteris paribus) for the households that make purchases under the loyalty program.

In this section, we will treat the impact of participation in a consumer loyalty program and thus of individual price advantages and will try to quantify them using information from our survey among retailers. However, the estimate was made indirectly, on the

basis of a link established between the survey information about the discounts and the share in the product range of these discounts compared with total sales revenue. These data are available separately for total sales revenues and for sales revenues exclusive of the loyalty program. Considering that the number of observations is low and the degree of representativeness is therefore constrained, the results must be interpreted with caution. Moreover, the effect calculated on the basis of the OeNB sample is likely to be at the upper limit for retailing as a whole, which includes many smaller retailers that do not operate a customer loyalty program.

By multiplying the average amount of the discount with and without customer loyalty programs with the share in the total product range for which discounts are given, we calculate the average amount of discounts for the total product range in a first step. The difference between the two values – roughly 0.7 percentage points[28] – represents the additional discount for loyalty cardowners on the basis of the total product range. This difference at the same time represents the price level difference that remains unaccounted for in the price statistics as a result of excluding customer loyalty programs and would be tantamount to the one-off inflationary bias resulting from unaccounted retail discounting. Based on total sales in Austrian retailing – about EUR 48.6 billion in 2009 – we calculate a one-off effect on purchasing power of about EUR 320 million, which, according to Statistics Austria, corresponds to about 0.2% of total household expenditure on which the HICP is based.

6 Discount Pricing – Summary

Austrian retailers have increasingly resorted to (discriminatory) pricing policies to raise sales and sales revenues in recent years. As the OeNB survey analyzed in this study illustrates, more than one-third of all retailers who provided information operate a customer loyalty program, and the customers participating in those programs contribute roughly one-third of total sales revenue. The average size of discounts was 7% for loyalty cardowners and about 5% for customers not participating in a loyalty program. Moreover, some retailing sectors change discount prices fairly often. Company-specific factors (above all, changes in the competitive situation, of purchasing conditions, and of costs) play a much larger role in discount pricing than macroeconomic reasons do (inflation, cyclical developments).

Customers are very avid users of loyalty programs: Some 30 million loyalty cards had been issued in Austria by 2008. Those customers that held loyalty cards owned on average five cards (A.C. Nielsen, 2008). The main motivation for card ownership is taking advantage of savings. The authors estimate the overall effect on purchasing power of participation in loyalty programs to come to around EUR 320 million. However, at the macroeconomic level, this effect would have to be offset against a possible price-raising effect of price discrimination measures.

Discount pricing is partly reflected in inflation measurement in the HICP, the key monetary policy indicator. Various institutions have put together a CPI handbook containing guidelines and conventions for coverage of price reductions outside of consumer loyalty

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[28] *Calculation: Average discount with/without loyalty card (6.6%/4.7%) multiplied by the average share in the range of products on which discounts are given with/without loyalty card (32.1%/31.5%).*

programs. The EU has passed a regulation treating HICP coverage of price reductions, in particular, different types of price differentiation (such as price, volume and personalized discounts) as well as a wide variety of discount prices. In Austria, customers in loyalty programs and nonparticipating customers often have a chance to benefit from discounts. Discounts granted under loyalty programs are not covered in the HICP, nor are frequently offered cash and loyalty discounts that are also mainly offered under consumer loyalty programs or discount coupons, the latter because they do not apply to particular products.

Price reductions are so complex and intransparent that they cannot be fully covered by inflation measures. Up to now, no satisfactory approach has been found to adjust the disclosed purchase prices by a broad variety of individual discounts that depend on the customer profile and the sector offering the discounts – including the benefits under customer loyalty programs.

The share of customers in a loyalty program is very high in some retail sectors: in some cases, up to 50% of the product range is subject to discounts. In other words, after factoring in discounts, the prices of individual goods are not the same as the relevant purchase prices stated in the stores and as the relevant prices reported for and covered by the HICP. Moreover, according to our survey, discount pricing changes quite frequently in some sectors – in 23% of the reporting companies, it changed at least once a week.

All these aspects have an impact on headline inflation, which is meant to record and reflect representative prices. This effect is all the more striking in sectors that operate a high percentage of consumer loyalty programs and whose goods represent a substantial

share of the HICP basket, such as food retailing, drugstores, clothes retailing and DIY as well as furniture retailing. The analysis of a particular Austrian food retailer's consumer loyalty program, which offers discounts, including substantial bargains, on a number of food staples for an extended period, comes to the conclusion that only a portion of these goods are covered in the HICP basket and that the impact on the rate of inflation is thus likely to be small.

Expanding the coverage of discounts in inflation measurement requires reliable sources and data. As our experience in this study shows, that is indeed the sticking point: For strategic reasons, companies are rather unwilling to provide such information. Scanner data would be more suitable for precise records of the prices for customers both with and without customer loyalty cards. However, this would require the preparedness of the statistical office to use such instruments; moreover – and this is more of a hurdle – retailers would need to provide the necessary information reliably and in a timely manner. Experience in the electrical retailing business, which already records scanner data for the CPI and the HICP, might be viewed as pioneers for the extension of the method to other relevant sectors. However, even this method of recording data is not a panacea – it cannot cover all types of discounts (such as coupons or loyalty discounts).

All in all, Austrian retailers regularly offer a wide variety of discounts. Inflation measurement has been adjusted to reflect the prevalent price discrimination strategies as laid down in relevant handbooks, guidelines and regulations. Wherever the data and the survey methods permit discounts to be covered efficiently, discounts that are granted to a broad group of customers

(not to individuals) are taken into account in regular inflation measurement. Looking ahead, it appears to be advisable to include also customer loyalty programs, which are common in many industries and which tend to generate higher discounts than ordinary discount schemes. Above all retailers which run customer loyalty programs throughout Austria and offer the same conditions to all cardholders should be included in inflation measurement.

References

A.C. Nielsen. 2008. Telephone survey on customer cards. March.

A.C. Nielsen. 2010. Handel in Österreich – Basisdaten 2009.

AKtion 2009. Willkommen im Club der Minimalangebote. In: Vorarlberger Monatszeitung für Arbeit und Konsumentenschutz. November.

Baumgartner, J., E. Glatzer, F. Rumler and A. Stiglbauer. 2005. How Frequently Do Consumer Prices Change in Austria? Evidence from Micro CPI Data. ECB Working Paper 523.

Bundesministerium für Arbeit, Soziales und Konsumentenschutz – BMASK. 2007. Kundenkarten – Bezahlt wird mit Daten. February.

Cecchetti, S. G. 2010. Monetary Policy and the Measurement of Inflation: Prices, Wages and Expectations. BIS Papers 49. January.

Dialego. 2004. Customer Cards – a Survey by Dialego AG. September.

Elfers, J. and H. Ulrichs. 2006. Customer Loyalty Cards – Products for Susi Sorglos and Joe Public. Commerzbank Corporates & Markets.

Ellis, C. 2009. Do Supermarket Prices Change from Week to Week? Working Paper 378. Bank of England. November.

Eurostat. 2001. Compendium of HICP reference documents (2/2001/B/5).

Griffith, R., E. Leibtag, A. Leicester and A. Nevo. 2008. Timing and Quantity of Consumer Purchases and the Consumer Price Index. Working Paper 14443. National Bureau of Economic Research. October.

Hartmann, M. 2006. Preismanagement im Einzelhandel. Gabler Edition Wissenschaft.

Hausmann, J. and E. Leibtag. 2005. CPI Bias from Supercenters: Does the BLS Know that Wal-Mart Exists? MIT and Economic Research Service. U.S. Department of Agriculture. June.

Helmedag, F. 2001. Preisdifferenzierung. In: Wirtschaftswissenschaftliches Studium (WiSt). Series 30. 10–16.

ILO, IMF, OECD, Eurostat, UNECE, The World Bank. 2004. Consumer Price Index Manual – Theory and Practice.

Janger, J. 2010. Determinants of Price Comparison and Supplier Switching Rates in Selected Sectors. In: Monetary Policy & the Economy Q1/10. OeNB. 66–86.

Kaupmann, S. 2009. Kundenkarten – Rabatt um jeden Preis? www.ard.de/wissen/der-glaeserne-mensch/kundenkarten/-/id=928024/mpdid=939980/nid=928024/did=939980/iyzcqw/index.html (retrieved on August 30, 2010).

Khan, R. J. and D. C. Jain. 2005. An Empirical Analysis of Price Discrimination Mechanisms and Retailer Profitability. In: Journal of Market Research 42(4).

KMU Forschung Austria. 2009. Konjunkturbeobachtung Einzelhandel. Jahresbericht 2008.

Konsument. 2009. Kundenkarten im Test: wenig Bonus für viel Info. In: Konsument 6/2009.

MAKAM – Market Research GmbH. 2008. Kundenbindung bleibt ein beliebtes Marketinginstrument des österreichischen Einzelhandels und Dienstleistungssektors. www.vmoe.at/show_content2.php?s2id=387 (retrieved on August 30, 2010).

Meffert, T. 2009. Strategisches Preismanagement. Volume 8. In: Eggert, A., W. Müller and K. Zerr (eds.). Markt-Management.

Musiol, G. and C. Kühling. 2009. Kundenbindung durch Bonusprogramme. Erfolgreiche Konzeption und Umsetzung.

Schindlar, A. 2010. Verbraucherpreisindex im Jahr 2009. In: Statistische Nachrichten 3. Statistics Austria. 221–230.

Siems, F. 2009. Preismanagement. Vahlens Handbücher.

Statistics Austria. 2005. Verbraucherpreisindex und Harmonisierter Verbraucherpreisindex – Standard-Dokumentation, Metainformationen.

Van der Grient, H. and J. de Haan. 2010. The Use of Supermarket Scanner Data in the Dutch CPI. Centraal Bureau voor de Statistiek.

Weber, S. and C. Pasche. 2008. Price Discrimination. In: Journal of Industrial Organization Education 2(1). Article 3. The Berkely Electronic Press.

Weissenberger, G. 2008. Kundenkarten: mit Rabatten und Boni gegen Käuferfrust. Binden Karten Kunden? In: Wirtschaft im Alpenraum. November. 102–105.

Wirtz, B. W. 2009. Direktmarketing-Management. Grundlagen – Instrumente – Prozesse. 2nd edition.

Wolk, A. 2007. Price Differentiation Strategies. University Frankfurt.

Annex – Questionnaire
Survey on Retail Discounting in Austria
(Please check as appropriate)

Question 1:
What types of price discounts does your company commonly offer?
(several answers possible)

Types of discounts	Linked to loyalty programs (loyalty cards, club membership, etc.)	Not linked to loyalty programs
Cash discounts: Instant rebate on all purchases during one shopping trip		
Up to 3%	❏	❏
Over 3% to 10%	❏	❏
Over 10%	❏	❏
VAT-free days (e.g. Saturdays)	❏	❏
Special offers, sale days, sale weeks, up to 3% off		
Special offers on particular products (for example 10% off on pears)	❏	❏
One-sale days or weeks on a particular range of products (for example 10% off on fruit)	❏	❏
Sale days or week on all products (for example 10% off on all products)	❏	❏
End-of-season sales (for example, winter clearance sales)	❏	❏
Coupons		
Coupons for particular products	❏	❏
Instant rebate coupons (for example entitling users to 10% off on purchases totaling over EUR 100)	❏	❏
Coupons for certain products printed on customers' receipts	❏	❏
Combination coupons	❏	❏
Coupons in advertising flyers	❏	❏
Loyalty discounts		
Reward programs and bonus points redeemable on exclusive items	❏	❏
Annual bonus (cash reward as a percentage of total annual purchases)	❏	❏
Limited-time discounts		
Discounts on products with a short use-by date (for example on fruit after 5:00 p.m.)	❏	❏
Happy hours, evening discounts, etc.	❏	❏
Multi-buy promotions		
Buy one, get one free / buy two, get one free	❏	❏
Scaled prices and bulk purchase prices	❏	❏
Individualized discounts		
Discounts for young persons, students, senior citizens	❏	❏
Family discount cards and other options	❏	❏
Birthday discount offers	❏	❏
Other discount options	❏	❏

Comments:

Question 2:

How high was the share of retail customers participating in your company's consumer loyalty program in 2009?

Up to 10%	❑
Over 10% to 30%	❑
Over 30% to 50%	❑
Over 50% to 75%	❑
Over 75%	❑

Question 3:

How high was the share of your company's sales in Austria to customers participating in the loyalty program in total sales in 2009?

Up to 5%	❑
Over 5% to 10%	❑
Over 10% to 20%	❑
Over 20% to 30%	❑
Over 30% to 50%	❑
Over 50%	❑

Question 4:

How high is the share of discount products in the total product range?

Share in total product range	Linked to loyalty programs	Not linked to loyalty programs
No discounts	❑	❑
Up to 20%	❑	❑
Over 20% to 40%	❑	❑
Over 40% to 60%	❑	❑
Over 60% to 80%	❑	❑
Over 80%	❑	❑

Comments:

Question 5:
How high are your discounts on average (exclusive of sales)?
(only one answer per column)

	Linked to loyalty programs	Not linked to loyalty programs
No discounts	❑	❑
Up to 3%	❑	❑
Over 3% to 5%	❑	❑
Over 5% to 10%	❑	❑
Over 10% to 20%	❑	❑
Over 20% to 30%	❑	❑
Over 30%	❑	❑

Comments:

Question 6:
How have the following discounting methods changed in your company in recent years?

	Increased sharply	Increased	Remained unchanged	Decreased
Instant rebate (cash)	❑	❑	❑	❑
Special offers	❑	❑	❑	❑
Coupons	❑	❑	❑	❑
Loyalty discounts	❑	❑	❑	❑
Limited-time discounts	❑	❑	❑	❑
Multi-buy promotions	❑	❑	❑	❑
Individualized discounts	❑	❑	❑	❑
Customer loyalty programs	❑	❑	❑	❑

Comments:

Question 7:
How often do your company's discount pricing policies change?

Several times a week	Weekly	Monthly	Quarterly	Semiannually	Rarely
❑	❑	❑	❑	❑	❑

Comments

Question 8:

How important are the following reasons for changes in your company's discount pricing policies? (several answers possible)

	Very important	Rather important	Rather unimportant	Unim-portant
Changes in costs	❏	❏	❏	❏
Changes in the company's competitiveness	❏	❏	❏	❏
Reductions of customers' incomes	❏	❏	❏	❏
Increases in customers' incomes	❏	❏	❏	❏
High inflation	❏	❏	❏	❏
Economic and financial crisis	❏	❏	❏	❏
Cyclical developments	❏	❏	❏	❏
Seasonal conditions (regular changes in conditions over the year)	❏	❏	❏	❏
Industry-specific shocks	❏	❏	❏	❏
Wholesaling conditions	❏	❏	❏	❏
Other reasons	❏	❏	❏	❏

Comments:

Question 9:

Which of the following sectors does your company primarily operate in?

Food and beverage retailing	❏
Retailing of drugstore goods and cosmetics	❏
Clothing and textiles retailing	❏
Retailing of shoes	❏
Furniture and fixtures retailing	❏
Mail order retailing	❏
Sports goods retailing	❏
DIY retailing	❏
Nurseries, lawn and garden supply retailing	❏
Books and paper goods retailing	❏
Electrical appliance retailing	❏
Travel agencies	❏
Gasoline stations	❏
Motor vehicle spares and accessories retailing	❏
Optical goods retailing	❏
Toys retailing	❏

Question 10:

How large is your company's market share in Austria in the sector you have checked?

Up to 10%	❏
Over 10% to 20%	❏
Over 20% to 30%	❏
Over 30% to 40%	❏
Over 40% to 50%	❏
Over 50%	❏

Event Wrap-Ups

Technological Change in the Field of Payment Instruments – Long-Term Implications for Monetary Policy and Competition Policy

Helmut Stix,
Martin Summer[1]

In July 2010 the Oesterreichische Nationalbank hosted a workshop entitled "Consumer Payment Choice and the Demand for Money," which provided insights into state-of-the-art research on payment habits and cash demand. The papers presented showed that there is a vast potential for new research in this field – in particular, when new theoretical approaches are combined with newly available micro data on household payment habits. This holds the promise of uncovering interesting new findings on the implications of technological change in the field of payment instruments for monetary and competition policies. Thus, it is of substantial importance for central banks to participate in such research activities.

Will cash be obsolete in the long term? Are new electronic payment technologies affecting the velocity of money demand and interest rate elasticity, and thus the monetary transmission mechanism? From a social perspective, does it make sense to use up to ten different network technologies for processing payments?

At first sight, such questions sound academic and more of a theoretical interest. However, this perception is misleading. After all, the past two decades have seen tremendous technological advances in the area of point-of-sale payments, and the dynamics of change continue to be very high. What is important for central banks in this respect is that the long-term evolution of cash usage, given the diffusion of new means of payment, is having implications both for the transmission mechanism of monetary policy and for one central activity of central banks – the provision of cash. Although the impact of the proliferation of new payment means in these areas is immediate and tangible, theoretical and empirical evidence on the implications of this development is still limited, notwithstanding the fact that researchers started to

look into the microeconomic structure of payment and cash holding habits of households and businesses as early as in the 1950s in order to better understand the hypotheses formulated on aggregate demand for money, as used in macroeconomic models of both the Keynesian and the monetarist type. Subsequent research has underlined the importance of such insights, as the assessment of the welfare costs of inflation is highly dependent on the exact microeconomic patterns of payment habits. Moreover, payment innovations have also given rise to substantial regulatory and competition problems.

The Economic Studies Division of the Oesterreichische Nationalbank (OeNB) has a long-standing research focus on technological advances in the field of payment instruments. Specifically, it has conducted and published regular surveys on payment habits since the 1990s, and it has been using the survey data for research purposes for a couple of years. Against this backdrop, the Economic Studies Division joined forces with experts of the Deutsche Bundesbank and two leading academic researchers in the field, namely Fernando Alvarez (University of Chicago) and

Francesco Lippi (University of Sassari and Einaudi Institute for Economics and Finance), and hosted a research workshop which took place on July 1 and 2, 2010, at the OeNB. The aim of the workshop was to bring together researchers who work on this topic, to discuss the state of research and to disseminate new ideas and modeling approaches. Participants came from the Federal Reserve Bank of Boston, the Bank of Canada, the ECB, De Nederlandsche Bank, the Deutsche Bundesbank, Banca d'Italia, the Banque de France, the Bank of Finland, Norges Bank, Česká národní banka as well as from the University of Chicago, the University of Haifa, the Universidade Nova de Lisboa, the London School of Economics, the École Nationale Supérieure des Télécommunications, the University of Sassari, Indiana University, the University of Vienna, and the Vienna Institute for Advanced Studies.

Essentially, the two-day workshop was designed to look into three different areas in which research has been particularly prolific as of late: During the first session of day one, *Scott Schuh (Federal Reserve Bank of Boston)* and *Carlos Arango (Bank of Canada)* presented new broad-based surveys on payment habits and empirical results based on these surveys. The second session of day one featured presentations by *Wilko Bolt (De Nederlandsche Bank), Tobias Schmidt (Deutsche Bundesbank)* and *David Bounie (École Nationale Supérieure des Télécommunications),* which were dedicated to theoretical or microeconometric models of payment habits. Day two brought presentations on the macroeconomic implications of the microeconomics of payment habits by *Fernando Alvarez (University of Chicago), Andre Silva (Universidade Nova de Lisboa)* and *Xavier Ragot (Banque de France and Paris School of Economics).*

Cash or Card? Surveys and Empirical Evidence

The degree to which consumers will continue to pay cash is an issue that is close to the heart of central banks. After all, central banks are responsible for the production and circulation of cash, and they need information on people's payment habits to be able to manage logistics adequately. Beyond the narrow operational focus, the long-term significance of cash is also relevant for more fundamental macroeconomic issues, such as: How is the transmission mechanism of monetary policy changing in a world in which cash is becoming less and less important? How do these developments affect our understanding and our assessment of inflation dynamics and the welfare costs of inflation?

Given the strategic significance and the economic policy implications of these issues, it is no coincidence that central banks worldwide are intensifying their efforts to develop data sets that will allow them to improve our understanding of these issues. With its payment habit surveys, the OeNB has done early work in this respect. A representative of a central bank with an established (and growing) research record in the field and a representative of a central bank which developed a national survey more recently opened the workshop on which we report here.

Scott Schuh (Federal Reserve Bank of Boston) provided a rundown of the survey-based research conducted by his institution in the more recent past. What started with a more narrow research interest in compiling data on the use of payment instruments (for instance with a view to assessing the future of check payments, which are very popular in the U.S.A.) has over time developed into one of the largest and most systematic payment surveys worldwide. In the

study *How Consumers Pay: Modeling Adoption and Use of Payment Instruments,* the data compiled were used for a microeconometric analysis of the factors that drive the decision to adopt and to use different payment instruments. A key finding of this study was that, while transactions costs of course play an important role, the choice of one payment instrument over another also depends on the characteristics of the payment instruments at hand.

Carlos Arango (Bank of Canada) presented initial results of a household survey launched by his institution in 2009, focusing on the underlying methodology, on the scope of the survey as well as on plans for future research. Given the rather unique scope of the information compiled, the survey data provide a very detailed overview of the payment and cash-withdrawing habits of the Canadian population. Methodologically speaking, both presentations showed how valuable the information is that can be compiled with state-of-the-art surveys. Looking ahead, we can expect further research in this particular area and further insights from those activities. Last but not least, the two presentations provided an excellent overview of developments on the other side of the Atlantic, thus facilitating a comparison with the situation in various European countries. *Kim Huynh (Indiana University and Bank of Canada)* as well as *Nicole Jonker (De Nederlandsche Bank)* provided comments on the two presentations.

Modeling Payment Habits – Implications for the Demand for Cash

The latter part of day one dealt with different approaches to modeling payment habits. *Wilko Bolt (De Nederlandsche Bank)* presented a theoretical microeconomic model, whereas *Tobias*

Schmidt (Deutsche Bundesbank) and *David Bounie (École Nationale Supérieure des Télécommunications)* presented empirical evidence based on microeconometric models.

The paper by *Wilko Bolt,* co-authored with *Sujit Chakravorti (Federal Reserve Bank of Chicago)* and entitled *Consumer Choice and Merchant Acceptance of Payment Media,* analyzes the prevalence of different payment instruments and their respective pricing structures in the form of a static model. In this model, three groups of agents – consumers, retailers and banks – each choose a payment instrument, a payment system network and a payment service. Using equilibrium analysis, the authors aim to explain the adoption rate of a given payment instrument (such as the percentage of retailers who accept debit card payments), the fee structure of this instrument and its allocative efficiency. Such a theoretical perspective makes sense, as it facilitates a systematic assessment of the adoption patterns of different payment instruments and as it provides insights into the pricing of payment services fees, which is relevant for regulatory policymaking. A key finding of this analysis is that equilibrium fee structures lack efficiency, which according to the authors highlights the need for regulatory action.

The discussant of the paper, *Francesco Lippi (University of Sassari and Einaudi Institute for Economics and Finance),* while underlining the significance of the issue at hand, critically discussed some details of the model, in particular the result that retailers accept various payment instruments in equilibrium. Lippi maintained that the simultaneity of payment instruments is only inadequately explained by the model.

Tobias Schmidt (Deutsche Bundesbank) presented a joint paper with *Ulf von*

Kalckreuth (Deutsche Bundesbank) and *Helmut Stix (OeNB)*. The purpose of the paper entitled *Using Cash to Monitor Expenditures – Implications for Payments, Currency Demand and Withdrawal Behaviour* is to model consumers' cash holding habits. The starting point of their work is that cash has a comparative advantage over other payment instruments when it comes to keeping track of one's expenses. This is why some consumers prefer to pay cash even when they could make cashless payments. The authors test and confirm this behaviorial hypothesis in a microeconometric analysis of Austrian and German survey data. Apart from several empirical insights, the key finding of the paper is the implication that cash is unlikely to be crowded out completely by payment innovations – which is in line with the fact that cash continues to be rather important despite the widespread use of new payment instruments, such as credit or debit cards.

The paper was discussed by *David Bounie (École Nationale Supérieure des Télécommunications),* who focused on the technical aspects of the econometric analysis and cross-checked the underlying hypothesis by applying it to a comparable French micro data set. While the sustained importance of cash became evident also from the French data, Bounie called into question the hypothesis that cash has a comparative advantage over other payment instruments when it comes to tracking one's expenses.

David Bounie moved on to present a paper of his own, entitled *Debit Card and the Demand for Cash* and co-authored with *Abel François (École Nationale Supérieure des Télécommunications).* Their paper, also a microeconometric study, discussed the long-term significance of cash in France. The authors found that ATM withdrawals increased the preva-

lence of cash transactions, whereas debit card payments decreased them. Aggregating both effects showed that, on balance, debit cards significantly reduced the prevalence of cash.

The discussant, *Alessandro Secchi (Banca d'Italia),* highlighted some incongruities between the theoretical results of the model and the empirical results of the estimates, but found the paper as such to be significant and relevant.

The papers presented in the second session all concluded that cash was rather unlikely to rapidly lose in importance or to be crowded out altogether despite the high incidence of payment innovations. This insight has been confirmed by both theoretical and empirical results, which contain valuable information for central banks in terms of their strategic and policy implications.

Payment Habits, Cash Demand and Inflation Costs

The second workshop day focused on macroeconometric findings on payment habits and payment innovations, with *Fernando Alvarez (University of Chicago), Andre Silva (Universidade Nova de Lisboa)* and *Xavier Ragot (Banque de France and Paris School of Economics)* discussing the issues from different perspectives.

Fernando Alvarez opened day two with a presentation of a joint paper with *Francesco Lippi* entitled *The Demand for Currency with Uncertain Lumpy Purchases.* Since Baumol and Tobin's models of cash management in the 1950s, inventory-theoretic models have played a central role in the microeconomic literature on money demand. Thanks to the availability of detailed survey data, the traditional research approach of using cash management models to provide microfoundations for the

aggregate money demand function can now be developed more fundamentally in line with empirical facts. In the paper, this approach is applied to several special cases for which it is possible to provide explicit solutions and identify the model based on the available survey data. Specifically, Alvarez and Lippi develop an inventory model with occasional large purchases that must be paid in cash. While the average level of cash balances remains unchanged in such a scenario, the average size of cash withdrawals is found to change. Moreover, the model implies that agents typically hold precautionary balances at the time of withdrawals. This helps explain deviations from the Baumol-Tobin model found in the data. In addition to explaining the consumer perspective, this approach may also be used to explain corporate demand for liquid assets.

The discussant of the paper, *Avner Bar-ilan (University of Haifa),* welcomed the empirical substantiation of cash management models and the analysis of their macroeconomic implications. The preliminary aspects of the work and the new modeling approach gave rise to a discussion on various technical details. The tenor of the discussion was that lending empirical support to currency demand models is a worthwhile research program, as it is capable of bridging the gap between microeconomic structures of cash holdings and macroeconomic cash demand parameters, which will ultimately deepen our understanding of the transmission mechanism and of the welfare costs of inflation.

Next, *Andre Silva (Universidade Nova de Lisboa)* discussed inflation costs in a model in which agents determine the frequency at which they exchange bonds for money – i.e. they make a choice of payment instruments. The key finding of his paper – entitled *Rebalancing Frequency and the Welfare Cost of Inflation* – is that the endogeneity of the frequency of transactions, in contrast to transacting at fixed intervals, leads to high welfare costs of inflation: As inflation rises, cash-holding levels need to be adjusted more frequently, which in turn pushes up welfare costs. The author estimates an inflation rate of 10% to cost a U.S. household some USD 900 per year on average.

The discussant, *Michael Reiter (Vienna Institute for Advanced Studies),* underlined the significance of this result but at the same time questioned the calibration of the model as it showed welfare costs to be that high. He criticized that the work provided little evidence – beyond the evidence used for calibrating the model – on the relationship between the frequency of transactions and inflation levels.

The final paper on the workshop agenda was *The Case for a Financial Approach to Money Demand* by *Xavier Ragot (Banque de France and Paris School of Economics).* The starting point for his study was that the traditional monetary models of macroeconomic theory imply that the distribution of money is directly linked to the distribution of consumption. Yet the data show that the distribution of money is much more similar to the distribution of financial assets and rather dissimilar to that of consumption. Ragot argued that a model with frictions in both the financial and the goods markets is much better suited to reproduce a realistic joint distribution of consumption, money and financial assets. The friction in the financial market is a fixed cost to adjust the financial portfolio, which creates a financial motive to hold money. Given that, he considered the empirical relevance of a macroeconomic theory of

money demand to be fundamentally dependent on the underlying theories on payment instruments.

The discussant, *Philipp Schmidt-Dengler (London School of Economics),* found the approach of the paper to be convincing, apart from the fact that the paper did not go beyond the stage of a thought experiment. He maintained that the paper failed to address the factors that cause the observed distributions and that it lacked elements that would have allowed for an external validation of the model. Yet like the other presentations of the day, this paper, too, highlighted the potential that research on payment instruments has for enhancing and deepening our understanding of macroeconomic monetary issues.

The Significance of Research on Payment Instruments – A Bird's Eye View

Overall, the workshop on *Consumer Payment Choice and the Demand for Money* provided an excellent overview on the state of the research in the field. While a couple of years ago, just a handful of central banks, including the OeNB, had had a payment systems research agenda, international interest in the issue has since increased, and a number of eminent mainstream academic researchers have started to tackle it as well. Can central banks afford not to do research in this field? Is this field relevant? Can it be developed further? Does it have the potential to attract more academic researchers?

The findings of the workshop provided answers to those questions, namely that, for one, it is indeed of substantial importance for central banks to look into those issues. The choice of payment instruments and the factors that determine this choice are of central strategic importance; after all, how we pay and why we do so also has direct implications for our understanding of the demand for currency and of the transmission mechanism. Thus, the issue of payment instruments touches upon a core competence of central banks.

The workshop presentations show that the research can be developed further. While still in its infancy, survey-based research projects are already providing highly useful data, which holds the promise that this strand of research will deepen and enhance our understanding of the underlying issues. The data might moreover help establish an empirically more robust basis for the discussion on regulatory aspects of payment innovations. There is also a distinct possibility that more academic researchers might take an interest in the issues. Finally, there is still a big divide between microeconomic and macroeconomic models. While providing microfoundations for macroeconomics has come under much criticism in recent years and has thus been discarded by many economists, research on the microstructure of payments is an area in which it makes sense to pursue further the concept of developing a meaningful combination of microeconomic and macroeconomic approaches. There is a clear link between the relevant concepts and the available micro data, and it would appear that all that remains to be done is to connect the dots. The OeNB's workshop showed that some important steps have already been taken in this direction, and that *Consumer Payment Choice and the Demand for Money* is a research agenda with a short past and a promising present and future.

Notes

Abbreviations

A-SIT	Secure Information Technology Center – Austria
ASVG	Allgemeines Sozialversicherungsgesetz – General Social Security Act
A-Trust	A-Trust Gesellschaft für Sicherheitssysteme im elektronischen Datenverkehr GmbH (accredited certification service provider)
ATX	Austrian Traded Index
BCBS	Basel Committee on Banking Supervision (BIS)
BIC	Bank Identifier Code
BIS	Bank for International Settlements
BOP	balance of payments
BSC	Banking Supervision Committee (ESCB)
CACs	collective action clauses
CEBS	Committee of European Banking Supervisors (EU)
CEE	Central and Eastern Europe
CEEC(s)	Central and Eastern European country (countries)
CESEE	Central, Eastern and Southeastern Europe
CESR	Committee of European Securities Regulators
CIS	Commonwealth of Independent States
CPI	consumer price index
EBA	Euro Banking Association
EBRD	European Bank for Reconstruction and Development
EC	European Community
ECB	European Central Bank
Ecofin	Economic and Financial Affairs Council (EU)
EEA	European Economic Area
EFC	Economic and Financial Committee (EU)
EIB	European Investment Bank
EMS	European Monetary System
EMU	Economic and Monetary Union
EONIA	Euro OverNight Index Average
ERM II	exchange rate mechanism II (EU)
ERP	European Recovery Program
ESA	European System of Accounts
ESAF	Enhanced Structural Adjustment Facility (IMF)
ESCB	European System of Central Banks
ESRI	Economic and Social Research Institute, Dublin
EU	European Union
EURIBOR	Euro Interbank Offered Rate
Eurostat	Statistical Office of the European Communities
FATF	Financial Action Task Force on Money Laundering
FDI	foreign direct investment
Fed	Federal Reserve System (U.S.A.)
FMA	Austrian Financial Market Authority
FOMC	Federal Open Market Committee (U.S.A.)
FSAP	Financial Sector Assessment Program (IMF/World Bank)
FWF	Fonds zur Förderung der wissenschaftlichen Forschung – Austrian Science Fund
GAB	General Arrangements to Borrow
GATS	General Agreement on Trade in Services
GDP	gross domestic product
GNP	gross national product
GSA	GELDSERVICE AUSTRIA Logistik für Wertgestionierung und Transportkoordination GmbH (Austrian cash logistics company)
HICP	Harmonised Index of Consumer Prices
HIPC	Heavily Indebted Poor Countries
HOAM.AT	Home Accounting Module Austria
IBAN	International Bank Account Number
IBRD	International Bank for Reconstruction and Development
ICT	information and communication technology
IDB	Inter-American Development Bank
IFES	Institut für empirische Sozialforschung GesmbH – Institute for Empirical Social Research, Vienna
Ifo	Ifo Institute for Economic Research, Munich

IHS	Institut für Höhere Studien und Wissenschaftliche Forschung – Institute for Advanced Studies, Vienna
IIF	Institute of International Finance
IIP	international investment position
IMF	International Monetary Fund
ISO	International Organization for Standardization
IWI	Industriewissenschaftliches Institut – Austrian Institute for Industrial Research, Vienna
JVI	Joint Vienna Institute
LIBOR	London Interbank Offered Rate
M3	broad monetary aggregate M3
MFI	monetary financial institution
MRO	main refinancing operation
MoU	memorandum of understanding
NACE	Statistical Classification of Economic Activities in the European Community
NCB	national central bank
OeBS	Oesterreichische Banknoten- und Sicherheitsdruck GmbH (Austrian banknote and security printing works)
OECD	Organisation for Economic Co-operation and Development
OeKB	Oesterreichische Kontrollbank (Austria's main financial and information service provider for the export industry and the capital market)
OeNB	Oesterreichische Nationalbank (Austria's central bank)
OPEC	Organization of the Petroleum Exporting Countries
ÖBFA	Österreichische Bundesfinanzierungsagentur – Austrian Federal Financing Agency
ÖNACE	Austrian Statistical Classification of Economic Activities
POS	point of sale
PRGF	Poverty Reduction and Growth Facility (IMF)
R&D	Research & Development
RTGS	Real-Time Gross Settlement
SDR	Special Drawing Right (IMF)
SDRM	Sovereign Debt Restructuring Mechanism (IMF)
SEPA	Single Euro Payments Area
SPF	Survey of Professional Forecasters
STEP2	Straight-Through Euro Processing system provided by the Euro Banking Association
STUZZA	Studiengesellschaft für Zusammenarbeit im Zahlungsverkehr G.m.b.H. – Austrian Society for Payment System Research and Cooperation
S.W.I.F.T.	Society for Worldwide Interbank Financial Telecommunication
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer
Treaty	Treaty establishing the European Community
UCIT(s)	undertaking(s) for collective investment in transferable securities
ULC	unit labor cost
UN	United Nations Organization
UNCTAD	United Nations Conference on Trade and Development
VaR	value at risk
WBI	Wiener Börse Index (all-share index of the Vienna stock exchange)
WEF	World Economic Forum
WIFO	Österreichisches Institut für Wirtschaftsforschung – Austrian Institute of Economic Research
wiiw	Wiener Institut für internationale Wirtschaftsvergleiche – The Vienna Institute for International Economic Studies
WKÖ	Wirtschaftskammer Österreich – Austrian Federal Economic Chamber
WTO	World Trade Organization

Legend

x   =   No data can be indicated for technical reasons

.. =   Data not available at the reporting date

0   =   The numerical value is zero or smaller than half of the unit indicated

Discrepancies may arise from rounding.

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The Focus on European Economic Integration (FEEI) is a channel for communicating the OeNB's ongoing research on Central, Eastern and Southeastern European (CESEE) countries, thus reflecting a strategic regional research priority of the OeNB. Contributions to the quarterly FEEI include peer reviewed studies dealing primarily with macrofinancial and monetary integration as well as economic country analyses and cross-regional comparisons.

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