** OeNB**

OESTERREICHISCHE NATIONALBANK

FOCUS ON AUSTRIA

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Contents

This paper focuses on the potential for a European dimension in wage negotiations. A number of ongoing changes contribute to facilitating the European coordination of wage bargaining. On the one hand, trade unions perceive an increased pressure to coordinate wage demands across countries in order to compensate for the loss of bargaining power caused by product market integration and EMU. On the other hand, obstacles to wage coordination are gradually declining. The preparations for the single European currency have not only brought about nominal, but also real convergence. At the same time, the focus of European policy makers is gradually shifting to the coordination of labor market policies and the integration of European labor markets. The Europeanization of wage bargaining is then evaluated in the light of two challenges to European labor markets: the need to reduce unemployment and the need for more wage flexibility to absorb asymmetric shocks as a substitute for monetary and fiscal policy. With respect to the first need, this analysis indicates that wage coordination may potentially lead to higher wage demands, which would not contribute to the desired unemployment reduction. With respect to the second need, it is found that wage coordination is not necessarily less flexible than wage competition, provided that trade unions do not unilaterally exploit problematic situations in other Member States.

The paper attempts to establish a few stylized facts about euro area's labor market given the increasing importance of smoothly functioning markets in EMU. We assemble econometric evidence regarding labor demand behavior, the development of real wages and the cyclicality of unemployment in the euro area. The constant-output real wage elasticity of labor demand in the euro area is estimated between –0.5 and –0.6, and around 50% of adjustment toward the optimal employment level was achieved within one year. We find that the second half of the 1990s was characterized by a continued process of wage moderation. At present the real wage gap has approximately returned to its value thirty years ago. In the 1990s unemployment cyclicality was higher in the euro area than in the U.S.A., while the opposite had been true in the previous two decades. The main reason for this is that employment in the euro area today responds much more strongly to cyclical fluctuations in output than in the past, and even somewhat more strongly than in the U.S.A. After the cyclical trough in 1993 structural unemployment hovered at around 10.5%, before starting to decrease significantly from 1998 onwards.

The opinions expressed in the section *"Studies"* are those of the individual authors and may differ from the views of the Oesterreichische Nationalbank.

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Editorial

Since the early 1990s European economic policy has made substantial progress in achieving more homogeneity in a number of policy areas. The Single Market provides for the free movement of goods and capital, the Stability and Growth Pact lays down common fiscal policy rules, and the completion of Economic and Monetary Union (EMU) has transferred monetary policymaking powers to a European institution. Only the labor markets and their long-established institutions seem to have remained largely unaffected by integration. This special issue of Focus on Austria, entitled "Wage Formation in the Euro Area," includes a range of studies centering on the national labor markets in the European Union (EU). The studies aim to provide answers to the following questions: Has the introduction of the single currency created pressure for labor market institutions to change and adapt to the new environment? Have wage and employment developments differed significantly across participating countries since the start of EMU? Has EMU had an impact on structural unemployment? The authors use different approaches to deal with these issues: *Alain Borghijs* and *Markus Knell* base their arguments on theoretical models, whereas *Camille Logeay* and *Wolfgang Scheremet* as well as *Helmut Hofer* and *Karl Pichelmann* rely on empirical evidence.

Alain Borghijs argues that European trade unions are faced with the need for strengthened coordination to avoid a loss of bargaining power. This trend has been reinforced by a higher degree of homogeneity between national economic structures and decreasing coordination costs. An evaluation of European wage-setting institutions has to take into account the two major challenges they are faced with: resolving the problem of high unemployment and enhancing real wage flexibility in EMU. Coordinated wage bargaining could result in higher real wages and thus impede the reduction of unemployment. Macroeconomic real wage flexibility, however, would likely not be affected. *Markus Knell* rejects the conventional wisdom according to which national trade unions in a monetary union tend not to fully perceive the inflationary repercussions of their wage demands, which induces them to be more aggressive in their wage demands. Yet if the central banks' reaction function includes unemployment, the common monetary policy in a monetary union responds more moderately to labor market signals. Rational trade unions take this effect into account and exercise more wage restraint than before monetary union, thus helping bring down unemployment.

In the empirical part of this special focus issue, *Camille Logeay* and *Wolfgang Scheremet* give an overview over macroeconomic developments before and after Stage Three of EMU, presenting evidence for inflation rate convergence and the absence of unemployment rate convergence in the euro area. The authors use descriptive empirical analyses and negatively sloped Phillips curves that are assumed to be different across nations due to institutional heterogeneity and thus reflect differences in real wage flexibility. A single inflation target in EMU leads to unemployment rate dispersion. The authors examine to what extent increased macroeconomic wage flexibility and monetary policy could contribute to reducing unemployment. *Helmut Hofer* and *Karl Pichelmann* calculate several macroeconomic labor market indicators for the entire euro area and attempt to detect signs of increasing flexibility, which would be of crucial importance in a monetary union. In fact, the cyclically adjusted rate of wage

increases (measured in efficiency units) has been on the decline since the mid-1990s. The authors show that in addition to a continued process of wage moderation, the cyclical reaction of employment and unemployment increased in the 1990s compared to the previous two decades.

Markus Knell
Alfred Stiglbauer

REPORTS

Calendar of Monetary and Economic Highlights

Austria

July 2002

1   The *Competition Act,* entering into force on July 1, 2002, envisages the establishment of a national competition authority. This authority shall be an independent body with a monocratic organization and shall have the right to take action and conduct investigations to protect and enforce Austrian competition law.

In line with Regulation (EC) No. 2560/2001 of the *European Parliament* and of the *European Council* of 19 December 2001 on cross-border payments in euro, the charges for cross-border electronic payment transactions within the EU up to the amount of EUR 12,500 have been adjusted as of July 1, 2002.

August 2002

1   According to the *Amendment to the Interest Rate Law* (Zinsenrechts-Änderungsgesetz; Federal Law Gazette I No. 118/2002), as of August 1, 2002, the level of interest for late payment in commercial transactions shall be 8 percentage points above the base rate; the applicable base rate for every six-month period shall be the base rate in force on the last calendar day of the previous half-year.

Also, as of August 1, 2002, the interest rate applied by the European Central Bank to its main refinancing operations rather than the interest rate on its deposit facility shall be the reference rate for changes of the base rate, as stipulated in the *Amendment to the Base and Reference Interest Rate Regulation.*

The Oesterreichische Nationalbank publishes the base rate and the marginal rate applied to the most recent main refinancing operation on its website (http://www.oenb.at).

European Union

June 2002

3   The Broad Economic Guidelines top the agenda of the *Eurogroup* meeting. No agreement can be reached on France's and Portugal's fiscal policies. The question of the Eurogroup's functioning after EU enlargement is also addressed.

The *European Commission* presents the sixth progress report on the Financial Services Action Plan (FSAP). At the Lisbon summit in March 2000, it had been agreed that the targets set out in the FSAP be met by 2005 and 2003 (for securities and venture capital markets). The European Council had decided that eight legislative proposals (on market abuse, collateral, distant marketing of financial services, insurance intermediaries, prospectuses, financial conglomerates, takeover bids and institutions for occupational retirement provisions) be adopted at the end of 2002 at the latest. Only little progress has been achieved on prospectuses and takeover bids. Progress in financial market integration could generate additional GDP growth of 0.5% to 0.7% in the EU (according to a study by the European Financial Services Round Table).

The *European Commission* for the first time submits proposals to facilitate securities transactions in Europe; the costs of these transactions are significantly higher in Europe than in the U.S.A. The directive is to ensure, for instance, that access to settlement systems cannot be obstructed.

4   At its meeting in Luxembourg, the *Ecofin Council* holds an "orientation debate" on the draft directive on prospectuses and reaches political agreement on the draft directive on institutions for occupational retirement provision. Also, the Council discusses the progress made in the implementation of the FSAP.

Furthermore, the Council hears a report on the current state of play in the negotiations on the taxation of savings income with Member States' dependent or associated territories and with third countries, such as Switzerland or the U.S.A.

11   The *European Commission* fines a number of Austrian banks a total of EUR 124.26 million for having colluded on interest rates. The largest single fine (EUR 37.69 million) is imposed on Erste Bank der oesterreichischen Sparkassen AG; Bank Austria AG and Raiffeisen Zentralbank Österreich AG will have to pay EUR 30.38 million each.

19   According to the latest semiannual survey conducted by the *Swedish national statistical office,* a relative majority of 46% of Swedes favors the introduction of the euro, 31% oppose the single currency, 23% are undecided. Support for Sweden joining EMU has never been greater since the survey was first conducted in 1997.

20   The following issues are on top of the agenda of the additional formal meeting of the *Ecofin Council* in the run-up to the Seville European Council:

After lengthy consultations, France agrees to achieve budgetary positions close to balance by 2004 at the latest; this wording allows France to post a deficit of up to some 0.5% of GDP.

The Broad Economic Policy Guidelines, the implementation of the "Euro-Mediterranean Investment Facility" in the fall of 2002, the Council report on the tax package, energy taxation, corporate governance and combating the financing mechanisms of terrorism are also discussed.

21   Representatives of 50 European banks found the *"European Payments Council"* (EPC) in Brussels. The EPC is to strategically support the banking industry in its efforts to create a single European payment area.

21/22 Asylum and migration as well as the Council reform and enlargement are the main topics at the *European Council* in Seville. As to the Council reform, the EU heads of state and government decide that the number of Council configurations be reduced from 16 to 9, which implies, among other things, that in future, the Ecofin Council is to cover also budget issues. The Council emphasizes that it intends to conclude the membership negotiations with the Central and Eastern European accession countries by the end of 2002. The accession treaties are to be signed in the spring of 2003.

Other topics on the agenda include the future of the EU (including the European Convention and the ratification of the Treaty of Nice),

preparations for the World Summit on Sustainable Development in Johannesburg, economic, financial and a number of foreign policy issues.

July 2002

11　The *Eurogroup* meets to debate fiscal and economic developments within the euro area. In particular, discussions revolve around the fact that the economic revival is more restrained than forecast in the European Commission's Spring Outlook.

The Eurogroup welcomes the strengthening of the euro as being in the interest of the euro area.

12　Thor Pedersen, who presides over *Ecofin meetings* during the Danish Council presidency, outlines the Ecofin's work program for the next half year. The focus will be on taxation, internal market financial services, closer and more effective economic policy cooperation, enlargement and the EU's global responsibility as well as fiscal issues.

In conclusions adopted on the issues of financial stability, supervision and integration, the Ecofin Council invites the Economic and Financial Committee (EFC) to prepare a proposal, by the end of September 2002, on how to best implement the "Lamfalussy approach" throughout the financial sector.

11/12　The *EU reform convention* meets in Brussels to debate EU external action, the third and final pillar of reform discussed in plenary session. Furthermore, this meeting lays the groundwork for the two working groups on foreign relations and defense policy, which will take up their work in September 2002.

The EU reform convention will not curb central bank independence and will leave the inflation goal unchanged. Likewise, the statutes and the mandate of the European Central Bank (ECB) shall not be subject to change.

16　The *European Commission* welcomes the appreciation of the euro. According to Pedro Solbes, EU Commissioner for Economic and Monetary Affairs, a harder euro should help keep inflation at bay and boost domestic demand.

19　The *Ecofin Council* (finance) debates on the EU budget for 2003. The budget plan submitted by the European Commission is below the EUR 100 billion threshold. The finance ministers intend to cut the proposed budget by another EUR 1.25 billion to EUR 96.96 billion, which would put the budget for 2003 1.4% above the one for 2002.

24　The *European Commission* claims that the U.S. reform of corporate reporting and auditing provisions would extend the reach of U.S. regulatory supervision to European companies and auditors. Among other things, the reform bill would empower the U.S. Securities and Exchange Commission (SEC) to conduct investigations at, and to require disclosure of files and hear witnesses from European auditing firms. Frits Bolkestein, EU Internal Markets Commissioner, announces a protest letter to the U.S. administration.

26　In a report to the European Commission, *Portugal* discloses a budget deficit of 4% for 2001. In response to this infringement of the Stability

and Growth Pact, the Commission initiates the excessive deficit procedure against Portugal. Ultimately it will, however, be up to the finance ministers to decide whether Portugal will indeed have to deposit a fine of EUR 625 million. The Portuguese government has announced a rigid savings plan.

August 2002

8   The *European Commission* revises downwards its third quarter growth forecast for the euro area, predicting that GDP will expand by 0.6% to 0.9% instead of 0.7% to 1% against the previous quarter.

9   *Danmarks Nationalbank* lowers its official rate by 0.05 percentage point to 3.50%. The interest rate cut has become necessary because of the Danish krone's strength, it argues.

18   The *European Commission* pledges to provide rapid and unbureaucratic assistance to the victims of the floods in Austria, Germany, the Czech Republic and the Slovak Republic. Structural fund money that has not yet been used for or assigned to other purposes is to be made available, German Chancellor Gerhard Schröder announces after a summit meeting of the heads of state and government of the countries affected and Commission President Romano Prodi in Berlin. Also, an EU disaster fund is to be created.

26   At the World Summit on Sustainable Development at Johannesburg from August 26 to September 4, 2002, jointly organized by the *European Union (EU)* and the *United Nations (UN),* the EU's agenda for promoting sustainable development and reducing poverty covers the issues water and sanitation, energy, health, trade and globalization, global public goods, as well as sustainable consumption and production.

30   Owing to the strength of the Danish krone, *Danmarks Nationalbank* cuts its key interest rates for the second time this month, again by 0.05 percentage point to 3.45%. The Danish krone was traded at DKK/EUR 7.4246 on August 29, 2002, the highest value since the start of Stage Three of Economic and Monetary Union (EMU).

Economic Background

Thomas Steinberger

Editorial close:
August 8, 2002

I Overview

The economic downturn appears to have bottomed out in Austria at the beginning of 2002. After having contracted throughout 2001, domestic real output growth (seasonally adjusted) rebounded in the first quarter of 2002, exceeding growth in the previous three quarters and topping the expansion achieved in the first quarter of 2001 by 0.1% (EUR 68.5 million). This implies that the Austrian economy has resumed a (very moderate) expansionary path.

At present, foreign demand is providing the major impetus for expansion. In the first quarter of 2002, real exports rose by 1.9% year on year, while real imports contracted by 4.1% on account of weak domestic demand. In other words, net exports contributed 3.2 percentage points to real GDP growth. By contrast, domestic investment and consumption growth has been rather restrained. Real gross capital formation shrank by 8.5% compared with the first quarter of 2001, with gross fixed capital formation dropping by as much as 10.6%. Even the real consumption expenditure of households, typically a key driver of growth, stagnated in the first quarter of 2002 compared with the same period of 2001. Public spending, meanwhile, contributed to output growth, as it expanded by 1.8% (real) year on year.

Judging from short-term developments, i.e. the seasonally adjusted quarterly growth rates of business investment (first quarter of 2002: −1.2%) and household consumption (first quarter of 2002: 0.3%), domestic demand should strengthen in the remainder of the year. However, for domestic demand to gain enough momentum to again provide a positive contribution to annual GDP growth, the short-term trend would need to hold.

While current economic surveys principally augur well for a continuation of the positive growth trend, the results have not improved markedly since the conspicuous brightening of confidence indicators at the onset of 2002. Notably surveys conducted abroad (ifo business climate index, business confidence in the euro area or the Conference Board indicator, a leading measure of U.S. consumer sentiment) imply that the short-term trend has actually reversed, i.e. is now pointing downward. The prospects for growth therefore hinge critically on consumers in both the U.S.A. and Europe, since they are currently sustaining the economic upturn. Should real consumption growth – expanding at an annualized, seasonally adjusted rate of 1.9% in the second quarter of 2002 – drop noticeably, the pace of growth would likewise decelerate.

Following a temporary spurt in February 2002, inflation measured by the Harmonized Index of Consumer Prices (HICP) has been decelerating to 1.5% in June 2002, which puts Austria below the euro area average. For the euro area as a whole, inflation stood at 2.0% in May 2002. Austria's inflation rate as measured by the national consumer price index (CPI) developed along similar lines and dropped to 1.7% in June 2002.

The Austrian labor market continues to suffer from the effects of the economic setback. From June 2001 to June 2002, the number of people registered as unemployed climbed by approximately 28,700 people. The seasonally adjusted unemployment rate continues to be at the highest level since the beginning of 1999 (at 6.9% according to the national definition, and at 4.1% according to the EU definition). The situation on the labor market is unlikely to

improve significantly unless economic activity recovers more powerfully in the months ahead.

2 Output Growth Slightly Improved

While Austrian industrial output declined 0.3% on balance between January and May 2002 against the corresponding period of 2001, the short-term trend of GDP growth is positive, as the annual rate of change in fact improved each successive month since the beginning of the year, from –2.4% in January 2002 to +5.6% in April (with the exception of May, when the monthly increment dipped to 1.6%).

A breakdown by sectors reveals that output growth has accelerated across the board. The top performer was the mining sector, where output expanded by 4.9% year on year from January to May 2002. Manufacturing activity increased by 2.2% in May 2002 (April 2002: 4.9%); however, given low growth at the beginning of 2002, first-quarter growth was nonetheless negative on balance at –2.9%. By contrast, the construction industry is still going through a difficult period; following two years of negative output growth (2000: –0.3% and 2001: –2.1%), the balance was just slightly positive in the first five months of 2002 at 0.5%. Within the building industry, building construction was hardest hit with a contraction of 3.7% in the first quarter of 2002. Conversely, business in civil engineering picked up gradually throughout 2001 to post 1.3% in the first quarter of 2002.

The relatively weak performance of the manufacturing industry is attributable, above all, to a contraction in the output of consumer durables (which shrank 3.5% year on year from January to May 2002) and capital goods (–1.2%). While in April 2002 the output volume of capital goods expanded by 7.7% compared with a year earlier, it sank 1.2% in May 2002. However, given that the underlying time series are comparatively volatile, data for single months do not provide particularly firm evidence. On a more positive note, the consumer goods industry reported an expansion by 3.0% in the January to May 2002 period.

The soft domestic demand in the initial months of 2002 also kept sales figures low. From January to May 2002, the real sales volume contracted by 0.6% compared with the corresponding period of 2001. While wholesale and retail trade achieved slightly positive growth rates at 0.8% and 0.1%, respectively, auto sales dropped off as much 10% over the first five months of 2002 in real terms. New car registrations even slumped by 20,995 vehicles or 9.6% in the first half of 2002. The short-term trend in real sales figures is not very reassuring: From January to May 2002, overall monthly trade turnover deteriorated from +1.1% to –4.5% in real terms. Growth in auto sales even dropped from +0.2% in January 2002 to –13.9% in May 2002.

3 Domestic Demand Remains Slack

In the first quarter of 2002, the growth rate of the Austrian GDP turned positive again at +0.1%. In other words, the Austrian economy has resumed an expansionary track, very moderate though it may be. At present, the main growth impetus is coming from foreign demand in general, and net exports in particular. In the first quarter of 2002, real exports rose by 1.9% year on year,

while real imports contracted by 4.1%, reflecting weak domestic demand. This means that net exports contributed 3.2 percentage points to real GDP growth, which is an appreciable increase from the fourth quarter of 2001 (0.8 percentage point). Domestic investment and consumption growth remained fairly lackluster in the first quarter of 2002. Real gross capital formation shrank by 8.5% compared with the first quarter of 2001, with gross fixed capital formation even dropping by 10.6%. In other words, spending still made a negative contribution to growth. It did, however, improve by 0.4 percentage point to −1.8 percentage points compared with the fourth quarter of 2001 (when it had come to 2.2 percentage points). Even real consumption expenditure of households, which tends to grow at a robust pace, stagnated in the first quarter of 2002 compared with the same period of 2001. Thus its contribution to GDP growth, which has typically been positive, dropped to zero in the first quarter of 2002. At least, strongly rising public spending continued to have a slight positive contribution to growth, which was unchanged at 0.3 percentage point in the first quarter of 2002. Errors and omissions, including changes in inventories, had a strikingly negative influence in the first quarter of 2002. The contribution to growth of this volatile component shrank to −1.6 percentage points from +0.6 percentage point in the fourth quarter of 2001.

Chart 1

Contribution to Austrian Real GDP Growth

Share of GDP growth against previous year, in percentage points

Legend:
- Private consumption
- Public consumption
- Gross capital formation
- Net exports
- Errors and omissions
- Real GDP (annual change in %)

Source: OeNB, WIFO.
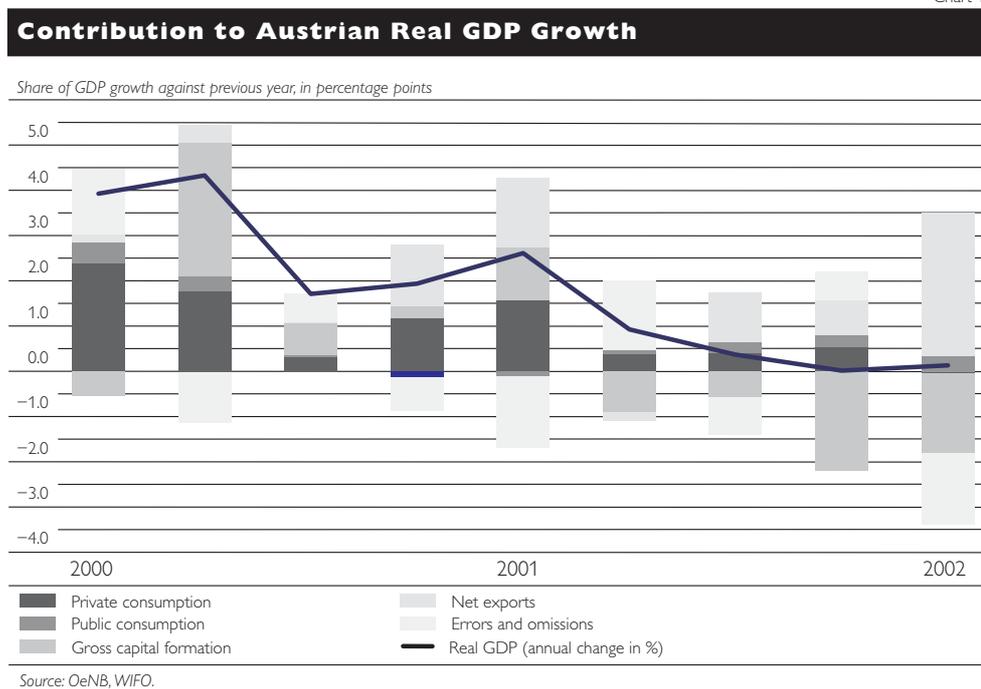
4 The Recession Continues to Weigh on the Labor Market

The economic setback had an ongoing impact on the Austrian labor market. At present, there are no signs that the demand for labor is strengthening. In June 2002, a total of 191,687 people were registered as unemployed, which is an increase by 17.6% or 29,000 people compared with June 2001.

The unemployment rate has been rising gradually since June 2001, i.e. for thirteen consecutive months, as reflected most conspicuously by the series of

seasonally adjusted unemployment data. In June 2002, the number of unemployed increased at an annualized rate of 8.6% against May. The seasonally adjusted unemployment rate thus continues to hover at the highest level since the beginning of 1999 (6.9% according to the national definition, and 4.1% according to the EU definition). In other words, the EU measure of unemployment is 0.5 percentage point above the 2001 average (3.6%). According to the national definition, the jobless rate averaged 6.1% in 2001.

Chart 2

Austrian Labor Market Developments

Source: Statistics Austria.
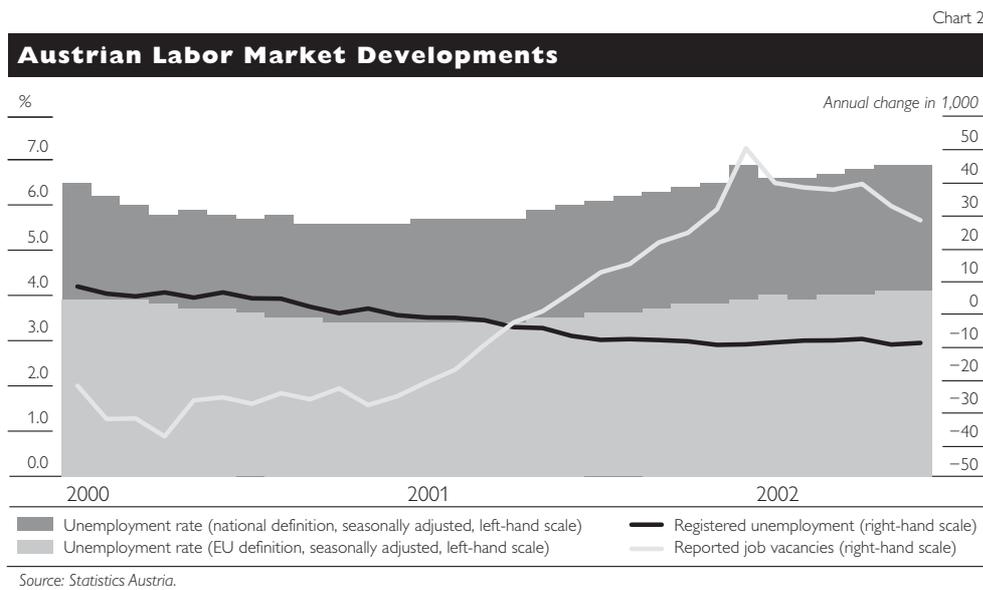
Men have been harder hit by the increase in unemployment than women. While male unemployment was 22.1% higher in June 2002 than a year earlier, female unemployment augmented by 12.7% over the same period. Moreover, young employees aged between 15 and 25 suffered particularly from the bleaker conditions on labor markets. In this age group, the annual increase in the jobless rate was as high as 22.6% in June 2002. Over the same period, the number of applicants for apprenticeship positions rose by 27.0%.

By sectors, the rise in unemployment was attributable first and foremost to manufacturing (which recorded the highest increase with an additional 6,078 people or 19.8% registered as unemployed in June 2002 compared with June 2001) and, to a somewhat lesser extent, to trade (+4,977 or 15.5%). Trade, in turn, fared somewhat worse than the tertiary sector as a whole, where unemployment climbed by 14.8% over the same period. In the construction industry, by contrast, the unemployment count rose by 3,895 people or 17.8% in the year to June 2002. In other words, it was among the harder hit industries, like the whole secondary sector, in which the jobless rate rose by 18.9%.

The changes in the number of job openings and job seekers also reflect the poor labor market conditions. While the vacancies figure for June 2002 fell 26.6% short of the corresponding 2001 figure, the ratio of registered unemployment to reported job openings rose by 60% from June 2001 to 7.8 jobless people per reported vacancy. Typically, employment developments follow changes in the pace of economic activity with a time lag. The currently

moderate expansion has so far failed to generate a sufficient number of new jobs to reduce the unemployment rate. Just like businesses seek to avoid the costs that come with laying off employees and to trim their payrolls through natural attrition alone during an economic downturn, they also tend to delay hiring until output growth has strengthened and become more sustainable. However, at the current rate of activity, chances are that 2002 will see a reduction in the annual unemployment rate and 2003 a reduction in the absolute number of unemployed as well.

5 Economic and Statistical Factors Underlie Marked Improvement of the Current Account

The current account on a cash basis closed the first five months of 2002 with a surplus of EUR 645 million, which is in fact the first positive balance for this period since 1992. Compared with May 2001, the current account improved by EUR 2,655 million, reflecting above all a better performance of the goods and services balances. The balance on goods was up by EUR 2,289 million on the 2001 figure, and the balance on services by EUR 1,120 million. Please note, however, that a new data collection method for tourism expenses of Austrian residents abroad has resulted in a shift of the seasonal pattern at unchanged annual data, which affects the analysis of the balance of payments on a cash basis. The new method mirrors reality more accurately, but in a year-on-year comparison it translates into an overrating of the balance on services in the first and fourth quarters and an underrating in the third quarter. The second quarter remains largely unaffected by the new method. In other words, at least part of the improvement in the current account can probably be ascribed to a purely statistical effect, which will drop out of the calculation as 2002 progresses.

The capital account, too, reflects the downward trend, registering a decline by EUR 109 million from January to May 2002. In the same vein, the income balance diminished by EUR 117 million, and the balance of current transfers by EUR 639 million. This plunge in current transfers implies that this position alone caused the current account deficit to widen by approximately EUR 1,100 million or some 1% of GDP between January and May 2002. The drag on the current account that current transfers constituted was thus almost as big as the impact of the goods account, which is typically in deficit (–EUR 1,756 million).

Foreign trade, which had boomed since 1993 but started to weaken in 2001, continued to slacken in the first quarter of 2002. The growth momentum of exports continued to drop further, even posting a slight year-on-year decline by 0.2% in the first quarter of 2002 compared with an annual expansion by 12.9% in the first quarter of 2001. While the seasonally adjusted time series continue to depict slightly positive annual growth rates, the good results of 1994 to 2001 (9.5% annual growth rate on average) are likely to go unrepeated in 2002 and 2003. The same holds true for import growth, which, at 6.4%, fell noticeably short of the corresponding 2001 figure. The latest month for which results are available, April 2002, stands out with rather striking results. Both the seasonally adjusted series and the unadjusted series for this month indicate a rebounding of foreign trade. It remains to be seen whether this temporary acceleration of foreign trade can be sustained.

Chart 3

Austrian Goods and Imports in Nominal Terms (Seasonally Adjusted)

Annual change in %

Exports
Imports

Source: Statistics Austria, OeNB.

The tourist industry continued to perform well in the initial months of 2002. After dipping slightly in the second and third quarters of 2001, the number of overnight stays grew fairly robustly at an annual rate of 3.8% (seasonally adjusted) in the final quarter of 2001 and quite respectably at 2.4% in the first five months of 2002. Above all, tourists from abroad boosted overnight stays, whereas stays by Austrian vacationers developed at a below-average rate.

6 Price Developments Moderate, Inflation Rate Trends Downward

The Austrian inflation rate has continued to subside. From a 1.7% reading in May 2002, the annual inflation rate measured by the HICP dropped to 1.5% in June 2002. Several factors contributed to the easing of the pressure on prices: the dissipation of the effects of the BSE and foot-and-mouth disease epidemics in 2001 on food, markedly lower vegetable prices and a further decline of prices in the communications sector. The reductions in vegetable and meat prices offset the partly substantial price hikes of bread and milk products, so that, overall, food and nonalcoholic beverages hardly rose from the same month of the previous year.

As has been the case since the beginning of 2002, the energy sector and fuels had the greatest share in dampening inflation. Price declines in these sectors resulted in a narrowing of the June inflation growth by 0.37 percentage point and 0.27 percentage point, respectively. All other groups of expenditure showed rising and, in part, surging prices. Miscellaneous goods and services (+3.6%) and recreation and culture (+2.3%) had a share of about 20% each in higher inflation, followed by the categories restaurants and hotels (+2.9%) and education (+29.9%) with a contribution to inflation of some 10% each. At a

half-year average of 1.7%, the Austrian inflation rate was below the euro area average.

In contrast to consumer prices, preconsumer price levels have been declining for quite some time. During the first five months of 2002, the producer price index was at least 1.5% lower than the year-earlier level; for May, we calculated a decline of 1.6%. In wholesale trade, prices started to trend downward at the beginning of 2002, causing the half-year average to lie 0.7% below the corresponding figure of 2001 and even 1.7% below the corresponding figure of June 2001.

Negotiated standard wages picked up by an average 2.4% year on year in June 2002, thus clearly exceeding the inflation rate. Negotiated standard wages in the public sector rose by 1.1%, that is, more moderately than in other sectors. Real wage income after taxes inched up by 0.1% compared with 2001. This slight increase notwithstanding, aggregate unit labor costs grew at a 2.3% annual rate owing to weaker than expected productivity growth. In the manufacturing industry, productivity developed somewhat more favorably, keeping the increase in unit labor costs at 2.1%. On these results, the Austrian manufacturing industry outperformed its trading partners by 0.2 percentage point on average but underperformed Germany by the same amount.

Chart 4

Wage and Price Developments in Austria

Annual change in %

Legend:
— Negotiated standard wage rate index
— Harmonized Index of Consumer Prices
— Wholesale price index
— Consumer price index

Source: Statistics Austria.
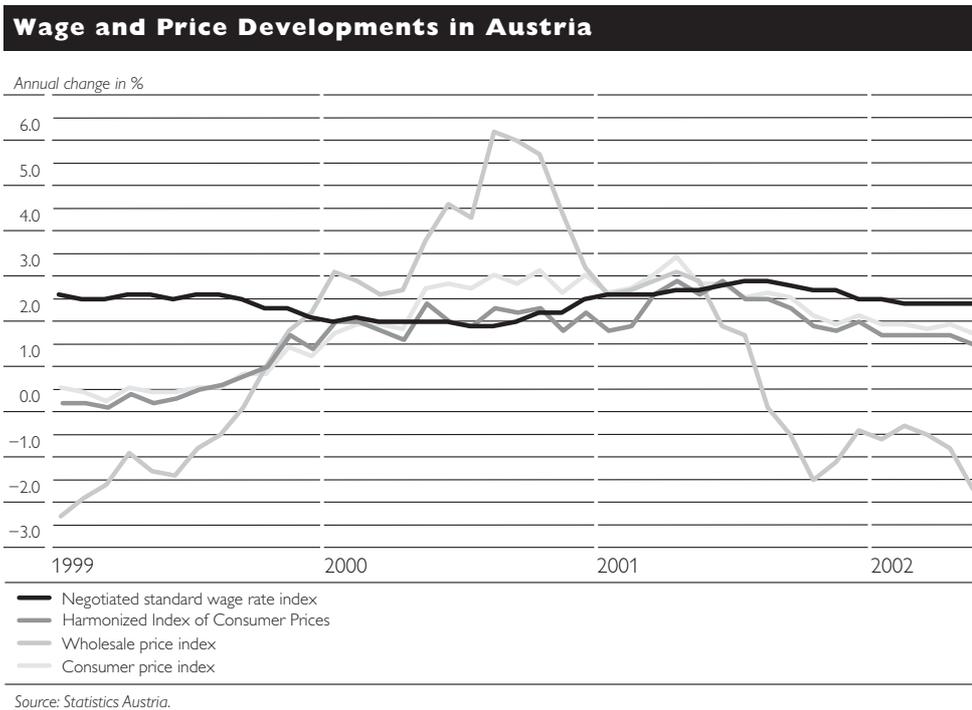
The second half of 2002 is unlikely to see a further dampening of inflation; in other words, the inflation rate should stabilize at the current level. For one thing, the moderate pace of economic activity acts as a buffer against demand-side price pressures; for another, the appreciation of the euro in July 2002, feeding through to prices with a slight lag, should keep consumer prices in check for the time being.

7 Confidence Indicators Suggest Tempered Expectations

In the second quarter of 2002, confidence indicators failed to keep up the steep ascent started at the beginning of the year. While most business surveys conducted between January and March 2002 had signaled mounting optimism, nourishing expectations of a burst of economic activity in the latter half of the year, the second quarter brought no further improvement in survey results. This implies that the economy will grow at a less robust pace than anticipated at the beginning of 2002. Nevertheless, the current level of the confidence indicators points to an ongoing moderate acceleration of economic growth.

Chart 5

Development of Confidence Indicators

Change against previous period, seasonally adjusted

— Industrial confidence − Austria
— Industrial confidence − euro area
— Ifo business outlook for western Germany
— Consumer confidence − Austria
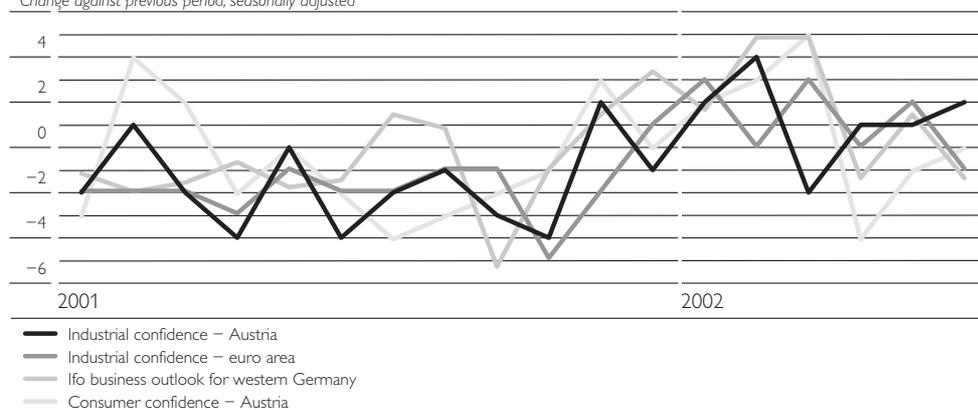
Source: WIFO, ifo Germany, EU Commission.

Austrian consumers are somewhat more pessimistic in their assessment of the economic outlook now than they were at the beginning of the year. In March, the consumer confidence index reached its high so far this year at 9 points. By June, the index had dropped to 4 points (May 2002: 4 points), with the largest setback having occurred already in April. Since then, consumer sentiment has stabilized again. By contrast, domestic industrial confidence kept improving gradually over the past months. The industrial confidence indicator reached its annual high to date at −14 points in June 2002 (May 2002: −16 points), rebounding from a temporary dip in March 2002. Industrial producers anticipate their order intake to shrink somewhat in the months ahead. Order expectations declined from −32 points in February 2002 to −39 points in June 2002 (May 2002: −38 points). Expectations about export order books improved somewhat faster than those about the overall order book levels.

Austrian construction firms, too, have recently become slightly more pessimistic about the economic outlook. The construction confidence indicator climbed to its annual high so far (−26 points) in February 2002, thereafter dropping to −40 points in June 2002 (May 2002: −38 points). This level, which is far below the long-time average, evidently reflects the current crisis in the construction industry. In general, the most positive responses have lately come from the services industry. The services confidence indicator rose appreciably from its low in January 2002 (0 points) to as much as 13 points in June 2002 (May 2002: 12 points). By contrast, the retail trade confidence indicator deter-

iorated noticeably over the past few months, plunging from its –5 point high of February 2002 to –18 points in June 2002. A relative stabilization did not occur until recently, when in May 2002 the monthly deterioration was no more than 2 points.

Unlike the EU's monthly business and consumer surveys, the WIFO business survey on the second quarter of 2002 (conducted in April 2002) found no clear evidence yet of a slowing of the economic revival. At the time, the production expectations of manufacturing businesses and their assessment of the future business situation reflected a marked improvement against the first quarter of 2002. Only in the building industry did expectations still point to a protracted economic stagnation.

Amid the present economic conditions, with net exports being the main engine of growth, the development of confidence indicators abroad appears to be particularly important. Foreign consumer and industrial indicators were firming until March 2002. For instance, the ifo business climate index in Germany, Austria's main trading partner, rose from 89.6 points in October 2001 to 106.0 points in March 2002. Since then, however, the index has dropped slightly, most recently to a June reading of 104.9 points. Likewise, the surveys for the euro area as a whole did not show any improvement in the past few months. The euro area economic sentiment indicator compiled by the EU Commission, while having advanced significantly from November 2001 (98.6 points) to March 2002 (99.5 points) has since then hovered around that level (June 2002: 99.6). Both the industrial and the consumer confidence indicator for the euro area tell a similar story. No further improvement has occurred since the burst of confidence registered between October 2001 and March 2002. On the contrary, in the short term, both indicators are even trending downward (change from May to June 2002: –1 point).

Development of Selected Economic Indicators in Austria

	2000	2001	2002[1]	2003[1]	2004[1]	Latest available period		
						2000	2001	2002
Annual change in %						*1st quarter*		
Economic output, real GDP at 1995 prices								
GDP	+ 3.0	+1.0	+1.1	+2.4	+2.6	+ 4.0	+ 2.6	+ 0.1
Gross fixed capital formation	+ 5.1	−2.7	+0.6	+3.6	+3.6	+ 9.0	+ 5.8	− 8.6
Personal consumption expenditures	+ 2.5	+1.3	+1.4	+1.9	+2.3	+ 4.3	+ 2.9	+ 0.0
Government spending	+ 0.9	+0.7	+0.2	+1.2	+0.5	+ 2.3	− 0.4	+ 1.8
Exports	+12.2	+4.5	+3.2	+6.4	+7.0	+14.6	+11.2	+ 1.9
Imports	+11.1	+2.9	+3.2	+5.9	+6.4	+14.9	+ 8.5	− 4.1
GDP per employee	+ 2.5	+0.7	+1.4	+1.9	+2.1	+ 3.1	+ 2.1	+ 0.7
Manufacturing						*January to May*		
Output index incl. construction	+ 6.9	−0.3	×	×	×	+ 9.1	+ 2.5	+ 0.6
Productivity per hour	+ 7.3	+1.3	×	×	×	×	×	×
Labor market						*January to July*		
Payroll employment	+ 0.8	+0.5	+0.1	+0.9	+0.9	+ 1.0	+ 0.6	+ 0.1
Registered unemployment	−12.4	+4.9	×	×	×	−12.4	− 2.1	+17.4
%								
Unemployment rate								
EU definition	3.7	3.6	3.9	3.7	3.6	3.8	3.5	4.0
National definition	5.8	6.1	×	×	×	6.2	6.1	7.0
Annual change in %								
Prices						*January to July*		
National CPI	+ 2.3	+2.7	×	×	×	+ 2.0	+ 2.9	+ 1.8
HICP	+ 2.0	+2.3	+1.6	+1.6	+1.7	+ 1.8	+ 2.4	+ 1.7
Wholesale price index	+ 4.0	+1.5	×	×	×	+ 3.1	+ 2.9	− 0.7
Wages								
Negotiated standard wage rate index	+ 2.1	+2.7	×	×	×	+ 2.0	+ 2.6	+ 2.4
Unit labor costs								
General	− 0.1	+2.3	+1.2	+0.5	+0.6	×	×	×
Manufacturing industry	− 5.1	+2.1	×	×	×	×	×	×
Relative unit labor cost[2]								
Vis-à-vis major trade partners	− 5.9	−0.2	×	×	×	×	×	×
Vis-à-vis Germany	− 2.4	+0.2	×	×	×	×	×	×
Foreign trade (Statistics Austria)						*January to May*		
Imports, in nominal terms	+14.7	+5.0	×	×	×	+16.7	+11.3	− 5.1
Exports, in nominal terms	+15.6	+6.5	×	×	×	+19.9	+10.3	+ 1.6
EUR billion								
Balance of payments[3]						*January to June*		
Current account balance	−5.36	−4.66	−5.53	−5.38	−5.41	−2.58	−1.82	+8.02
Balance on goods	−2.99	−1.47	×	×	×	−3.87	−4.31	−1.78
Balance on services	+1.74	+1.74	×	×	×	+2.59	+3.33	+4.25
Travel	+1.54	+1.45	×	×	×	+1.44	+1.62	+2.47
%								
Interest rates						*July*		
EONIA	4.12	4.39	×	×	×	4.31	4.51	3.30
Benchmark[4]	5.56	5.07	×	×	×	5.60	5.29	5.08
Annual change in %								
Effective exchange rate of the euro								
Nominal	−10.4	+1.7	×	×	×	− 8.4	− 1.6	+ 7.0
Real	−10.1	+3.0	×	×	×	− 8.4	− 0.3	+ 8.3
Indicator of Austria's price competitiveness[5]	− 3.6	+0.1	×	×	×	*May* − 4.3	− 0.1	+ 0.8
% of GDP								
Budget Fiscal balance[6]								
Central government fiscal balance	− 1.6	−0.6	×	×	×	×	×	×
General government fiscal balance	− 1.5	+0.1	− 0.2	− 0.2	+ 0.2	×	×	×

Source: OeNB, Statistics Austria, Austrian Institute of Economic Research, Austrian Public Employment Service, Association of Austrian Social Security Institutions.

[1]) OeNB spring 2002 forecast.
[2]) Manufacturing industry, calculated in uniform currency.
[3]) Annual figures based on transactions, latest available period on cash balances.
[4]) Secondary market yield of the most recently issued ten-year government bond.
[5]) Until December 1998: real effective exchange rate of the Austrian schilling.
[6]) 2000 and 2001 as reported to the EU Commission in February 2002.

Balance of Payments
in the First Quarter of 2002[1])

René Dell'mour,
Patricia Fahrngruber,
Christine Stecyna,
Patricia Walter,
Isabel Winkler,
Robert Zorzi

— Current account surplus widens while external developments slow down.
— Austrian direct investment abroad is highly dynamic.
— Securities transactions clearly outperform 2001 reference values.

1 Current Account

The current economic outlooks (spring/summer 2002) agree in the assumption that, after bottoming out in the fourth quarter of 2001, the economy should start to rebound in the first half of 2002 and gain more speed during the second half. Current economic indicators, however, do not point toward an imminent upswing, and neither do available balance of payments data for the first quarter of 2002 indicate a recovery (in terms of exports) for the first quarter of 2002.

According to balance of payments statistics, Austria's current account (based on transactions)[2]) recorded a EUR 1.2 billion surplus in the first quarter of 2002, thus expanding by more than EUR 1 billion (table 1). An increasing surplus of the goods and services accounts and a shrinking deficit on income characterized current account developments.

Austria's Current Account Broken Down by Regions[1])
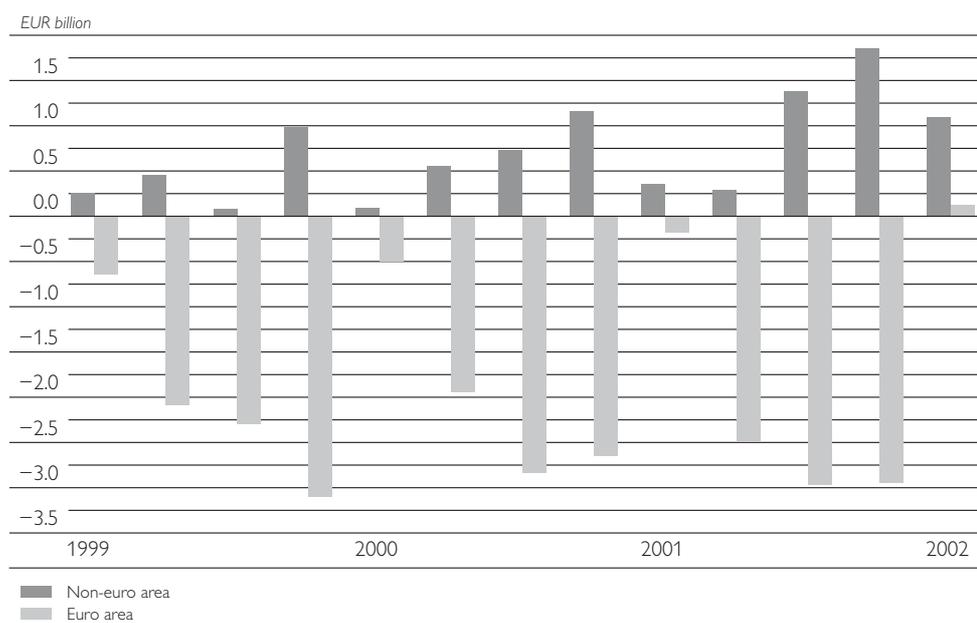
Source: OeNB.
[1]) 2001: Revised data. 2002: Provisional data.

For the first time since 1996 (chart "Austria's Current Account Broken Down by Regions"), Austria's current account balance vis-à-vis the *other euro area countries*[3]) showed a slight surplus of EUR 120 million in the first quarter of

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1   Based on transactions. Editorial close: August 19, 2002.
2   Contrary to the cash balance, whose purpose is to provide a quick overview, the transaction balance complies with a calculation model requiring period adjustments and other adjustments. The transaction balance confirms the improvement of results which the cash balance had already reflected for the first months of 2002.
3   Since January 1, 2001, including Greece; the analogous 2000 figures were calculated backwards.

2002 (first quarter 2001: –EUR 170 million). Improvements in the reporting quarter are basically attributable to the goods subaccount.

In its external relations to *non-euro area countries,* Austria typically reports a current account surplus; coming to EUR 1 billion in the quarter under review, this surplus by far exceeded the comparable 2001 result of EUR 360 million. Both the goods and services and the income accounts were in surplus. Only current transfers reported a shortfall (EUR 630 million), which can be attributed to household transactions.

Thus, Austria contributed to the current account surplus of the euro area as a whole. According to the most current quarterly data provided by the European Central Bank (ECB), the euro area current account turned from a deficit of EUR 10.5 billion in the first quarter of 2001 to a surplus of EUR 4.3 billion in the first quarter of 2002. One of the major factors in this development was a EUR 15.5 billion rise in the goods surplus, as imports declined faster (–9.7%) than exports (–3.3%).

1.1 Goods and Services

In the first quarter of 2002, the surplus on goods and services climbed by EUR 1.1 billion to EUR 2.4 billion, as imports went down faster (–8%) than exports (–3.6%).

1.1.1 Goods

Austrian external trade (data according to Statistics Austria) recorded a deficit of around EUR 60 million in the first quarter of 2002 – an improvement by EUR 1.2 billion in the goods balance compared to the first quarter of 2001.[1]) Exports stagnated, while imports diminished by 6%, which was essentially attributable to the decline of oil prices by more than 20% year on year.

Austria's foreign trade with the *euro area countries* (table 2) leveled off slightly in the reporting period, with exports going down by 2.6% and imports by 3.6%. In absolute terms, Austrian goods exports to the euro area came to EUR 10.5 billion, while Austrian imports from the other euro area countries amounted to EUR 11.8 billion. The deficit on this item contracted by EUR 160 million to EUR 1.2 billion.

In the period under review, merchandise trade with *non-euro area countries* recorded a growth in exports, with imports declining. Compared to 2001, merchandise exports climbed by 4.2%, while goods imports went down by 9%. Austria's exports to non-euro area countries came to EUR 8.4 billion, while non-euro area imports amounted to EUR 7.3 billion. Imports, in particular from Eastern European countries, decelerated markedly (owing to cheaper energy imports), namely by EUR 150 million or 5.8%, while exports to this region went up by 6.8% or EUR 200 million in the reporting quarter. Exports to Romania, Croatia and the Slovak Republic and to the CIS countries posted

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1   For conceptual reasons, balance of payments statistics deviate from the external trade data compiled by Statistics Austria. This is attributable to differences in value definition (free on board – fob, and cost, insurance, freight – cif). While in the external trade statistics, goods are valued at cif, in the balance of payments, both exports and imports are valued at fob and freight and insurance costs are reflected in the services account, which is in line with international practice.

the highest relative growth rates. Imports from developing countries and Japan clearly decreased by EUR 480 million or 26% and EUR 100 million or 21%, respectively, which was also attributable to developments in energy prices.

1.1.2 Services

In the first quarter of 2002, the services surplus shrank by EUR 510 million to EUR 1.7 billion, which is chiefly attributable to the deficit on the unclassified transactions item (which is part of the services subaccount) expanding from EUR 840 million to EUR 2.0 billion. The unclassified transactions item derives from an imbalance between banks' reported import and export payments for goods and the sum of merchandise import and export payments according to the foreign trade statistics compiled by Statistics Austria, with the former outweighing the latter. In line with international practice, the goods item of the balance of payments is calculated from the foreign trade statistics provided by the national statistical offices. The unclassified transactions item thus corresponds to the difference between merchandise payments and foreign trade figures.

1.1.2.1 Travel

Tourism in Austria continued on its upward path in the first quarter of 2002, with the *number of foreign tourist bednights* climbing by more than 6.5% year on year to an all time high of just under 32 million. An uptrend was registered for almost all countries of origin, with the number of bednights sold to German (+1.2 million) and Dutch (+175,000) tourists rising fastest in absolute terms, followed by a relatively strong rise in overnight stays of tourists from the United Kingdom, Switzerland and Italy (table 4). The number of bednights sold to tourists from Central and Eastern Europe also increased by two-digit figures. Declining figures were reported almost exclusively for overseas tourists, in particular for visitors from the U.S.A. (–43,000), but also from Japan, Canada, South Africa and South America – a fact that might still be attributable to uncertainty triggered by the events of September 11, 2001.

Travel receipts climbed in parallel with overnight stays, increasing by 7% in the first quarter of 2002 and thus coming to more than EUR 4 billion, i.e. EUR 265 million more than in the comparable period of 2001 (table 3). Receipts from international passenger transport, which are no longer included in the travel account, declined by 4.8% to EUR 500 million, however.

As cash payments are no longer effected in schillings, Austrians' travel expenses are now determined on the basis of a survey among households.[1]) According to this survey, travel expenses (excluding international passenger transport) came to EUR 1.4 billion and expenses for international passenger transport to EUR 170 million, which equals a year-on-year decline by 21% and 28%, respectively. This comparison only holds in relative terms, however, given the fact that, while producing comparable annual results, the survey reveals

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1   *The survey is a telephone poll covering 3,000 households per quarter and has been carried out at regular intervals since 1988. The original aim was to collect additional information on the purpose of individual travels and the type of spending. Since 2001, Statistics Austria and the Oesterreichische Nationalbank have commissioned this survey together.*

different seasonal patterns that reflect the economic reality more accurately. While, according to this survey, *travel expenses* in the first and fourth quarters are always clearly lower than according to the previous system, the reported values for July and August are significantly higher. Compared to last year's survey, travel expenses (including international passenger transport) increased by EUR 90 million or 5.7% in the first quarter of the reporting year. As a consequence, the reported overall improvement in the travel balance by EUR 640 million and the entire current account balance have been distorted upward: based on comparable figures, the travel surplus only expanded by EUR 160 million.

1.1.2.2 Other Services

The services subaccount excluding travel reports a deficit of EUR 870 million in the first quarter of 2002, compared to a surplus of EUR 270 million in the first quarter of 2001 (mainly attributable to the expanding deficit on the unclassified transactions item; see section 1.1.2). *Transport* (including passenger transport) and *communication services* were the services items that posted the highest gains, at EUR 110 million and EUR 50 million, respectively.

1.3 Income

In the first quarter of 2002, the deficit on the income subaccount of EUR 620 million remained one third below the comparable result in the first quarter of 2001. This reduction is mostly traceable to income on other investment. While income received from the *compensation of employees* (basically income received from the compensation of border workers and seasonal workers) posted a surplus (EUR 130 million) equal to that of previous years, the deficit on *investment income* remained below the figures for the first quarter of 2001 (EUR 750 million compared to EUR 1 billion).

The regional breakdown of net investment income shows that the bulk of net outflows went to the euro area (EUR 860 million), while the highest share of net capital income came from Eastern Europe. The EU accession countries[1]) account for an increasing share in net inflows from cross-border income (EUR 360 million).

For the first quarter of 2002, a breakdown by the most important subaggregates – as depicted in chart "Components of Austria's Investment Income" – shows net deficits on income from direct and portfolio investment (EUR 390 million and EUR 890 million, respectively), and a surplus on other investment income (EUR 530 million). On the assets side, this aggregate is dominated by income on other investment (44%), followed by income on portfolio investment (39%, table 5). On the liabilities side, income on portfolio investment play the greatest role (54%), outperforming income on direct and other investment, which have about equal weight.

The shortfall on *direct investment income* (EUR 390 million) is attributable to the fact that foreign direct investment in Austria continues to exceed Austrian direct investment abroad and that inward direct investment, thanks to longer-term relationships, yields on average higher rates of return. Austrian investors'

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1   The EU is currently in accession negotiations with Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic and Slovenia.

Components of Austria's Investment Income[1]

Balances in EUR million

Income on portfolio investment
Income on direct investment
Income on other investment
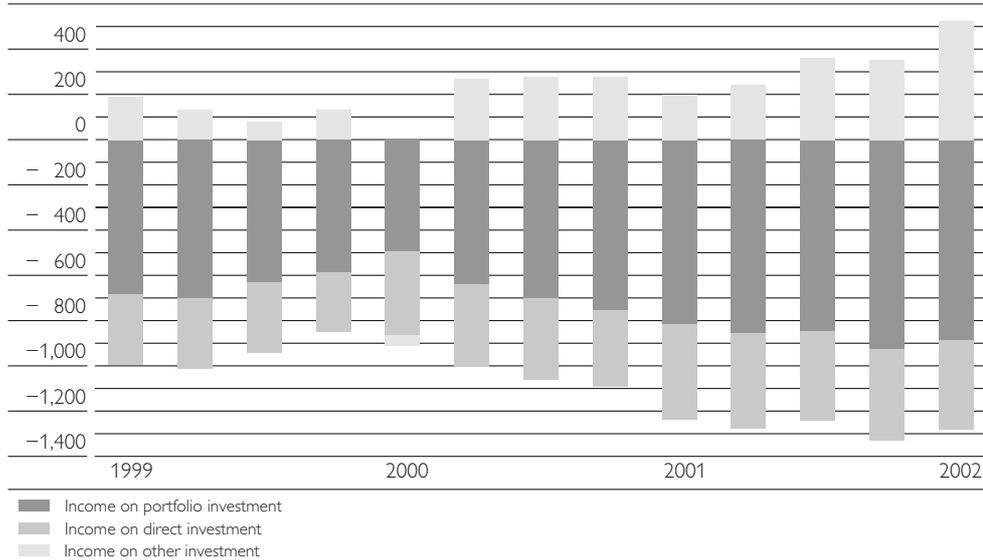
Source: OeNB.
[1] 1999 to 2000: Final data. 2001: Revised data. 2002: Provisional data.

profits of EUR 520 million (+30%) in the period under review are contrasted by outflows to foreign investors to the tune of EUR 915 million (+11%). Actually distributed profits came to EUR 130 million for outward and EUR 300 million for inward direct investment.

Income on portfolio investment remains the most important component of investment income in quantitative terms. Income on investment in foreign securities came to EUR 1.3 billion in the first quarter of 2002 and was clearly surpassed by the costs resulting from Austria's external debt position (EUR 2.2 billion) in the same period. A regional breakdown of the balanced inflows and outflows in this income category shows that net outflows to the EU continue at a

Net Investment Income on Portfolio Investment

by Selected Country Groups[1]

EUR billion

Euro area
Denmark, United Kingdom, Sweden
Accession countries
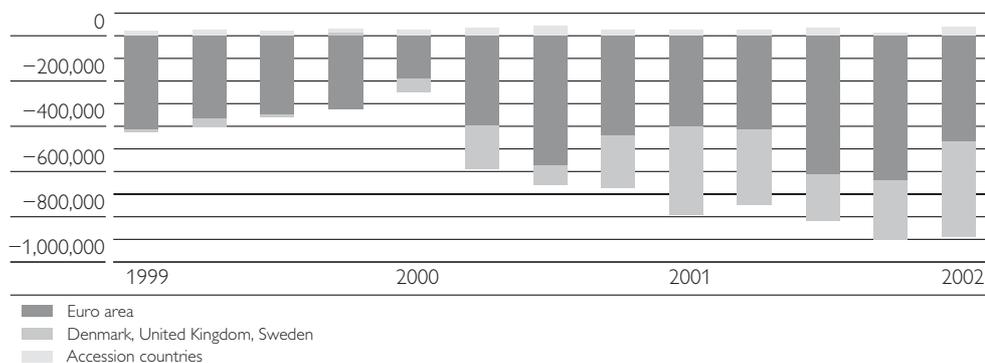
Source: OeNB.
[1] 1999: to 2000 Final data. 2001: Revised data. 2002: Provisional data.

high level (EUR 880 million), although the euro area has, over the past few quarters, lost some of its importance to Denmark, the United Kingdom and Sweden. In terms of income on portfolio investment, the EU accession countries are net contributors vis-à-vis Austria.

Income on bonds and notes accounts for 95% of the results on both sides of the balance sheet. In the first quarter of 2002, Austria recorded interest income of EUR 1.2 billion, while Austrian borrowers faced interest payments to the tune of EUR 2 billion. On the assets side, interest income went mainly to the other sector (60%), in particular institutional investors, and to banks (35%); the liabilities side records debt service payments by the general government (50%) and banks (38%). In a comparison of net results, the general government and banks are net contributors, while the other sector consists of net recipients (mostly institutional investors).

Income on other investment and reserve assets posted a surplus of EUR 530 million in the review period. A sectoral breakdown of this item indicates that the banking system (OeNB and banks) are net recipients, while nonbanks (general government and other sector) are net contributors. An analysis of this item according to financing instruments for banks, the general government and the other sector shows that in total (net) loans account for 90%, as inflows and outflows from deposits are almost perfectly counterbalanced.

1.4 Current Transfers

The shortfall of current transfers came to EUR 600 million in the first quarter of 2002, which corresponds to an expansion by EUR 390 million. This increase in outflows was mainly attributable to the private sector, which stepped up its net payments from EUR 70 million to EUR 380 million. Transactions with the EU dominated current transfers of –EUR 220 million net in the public sector. Austria's contributions to the EU amounted to EUR 560 million during the reporting period, while its receipts (excluding EU contributions to infrastructure projects) came to EUR 410 million, resulting in a net payment of EUR 150 million compared to EUR 110 million in the first quarter of 2001.

2 Capital Account

The capital account closed the reporting quarter with outflows to the amount of EUR 80 million.

Government sector capital transfers in kind resulted in net outflows to the tune of EUR 40 million compared to net inflows of the same amount in the first quarter of 2001. These outflows comprise restitution payments by the general government.

Private sector capital transfers in kind led to a further reduction in the deficit (EUR 50 million) compared to 2001 and 2000. Outflows are mainly attributable to debt reliefs.

In terms of volume, capital transfers in *cash* only play a minor role in Austria's balance of payments statistics.

3 Financial Account

In contrast to moderating gross capital flows in the year 2001 and to shrinking current account volumes in the first quarter of 2002, financial transactions showed a clear uptrend in the period under review. In the reporting quarter, Austria's financial account showed a clear rise in capital exports (by EUR 4 billion) compared to the same period of the previous year (table 6). These capital exports resulted from a rise in both inward and outward investment. Austrian external claims augmented by EUR 13.5 billion (first quarter of 2001: EUR 8.5 billion), while financial liabilities climbed by EUR 9.5 billion (first quarter of 2001: EUR 7.9 billion).

At EUR 1.8 billion, Austrian *direct investment abroad* clearly surpassed foreign direct investment (FDI) in Austria, which came to EUR 870 million. This resulted in net capital outflows to the tune of EUR 890 million, compared to net inflows of EUR 470 million in the first quarter of 2001. *Portfolio investment* recorded higher purchase volumes in the reporting period (compared to the first quarter of 2001), both for outward and inward investment (EUR 13.1 billion compared to EUR 5 billion and EUR 12.8 billion compared to EUR 6 billion, respectively). Austrian investment in foreign securities in the first quarter of 2002 almost equaled the annual figure for 2001; investment in domestic securities came to more than two thirds of the annual figure for 2001. Debt securities accounted for the highest share in this result, surpassing the comparable values of 2001 in both categories: Austrian investors purchased debt securities to the tune of EUR 11 billion (compared to EUR 8.3 billion in the same period of 2001), while foreign investors bought domestic securities worth EUR 11.9 billion (compared to EUR 11.1 billion in the first quarter of 2001). In the reporting period, Austrian investors bought foreign equities worth EUR 2.2 billion, while nonresidents invested EUR 890 million in Aus-

Austria's Financial Account (Selected Net Subaccounts)

in the First Quarter of 2002

EUR billion

Direct investment	Portfolio investment	Other investment
Austrian investment abroad		
Direct investment	Portfolio investment	Other investment
Foreign investment in Austria		

■ Euro area　　■ Non-euro area
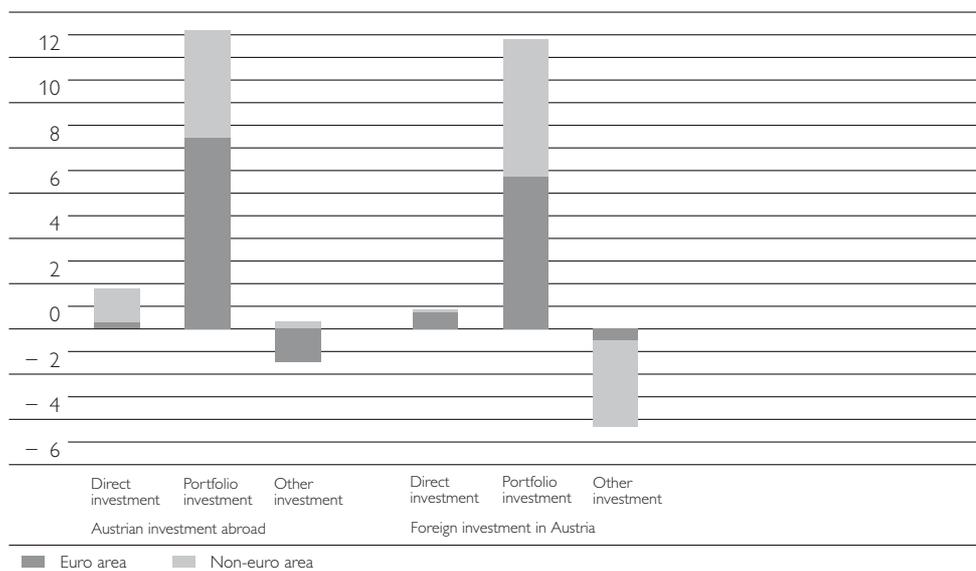
Source: OeNB.

trian equities. Net outflows from *other investment,* which are basically determined by short-term financial flows of the banking system, declined to EUR 3.1 billion from EUR 4.4 billion during the reporting period.

A *regional breakdown* of cross-border capital flows shows that the net result vis-à-vis the other *euro area countries* turned from capital imports to the amount of EUR 1.4 billion to capital exports to the tune of EUR 350 million (table 7). Austrian investors showed a particularly vivid interest in euro area investments in the first quarter of 2002, which resulted in (gross) capital outflows of EUR 7.5 billion (first quarter of 2001: –EUR 500 million). Cross-border capital inflows from the euro area climbed at a similar pace (by EUR 7.1 billion compared to EUR 2 billion in the same period of 2001).

In the reporting quarter, Austrian investment in *non-euro area countries* posted a rise in net outflows (EUR 3.7 billion compared to EUR 2 billion). Asset growth in Austria slowed down, coming to EUR 6.1 billion (first quarter 2001: EUR 8 billion). The growth of domestic debtors' liabilities vis-à-vis non-euro area countries declined even more pronouncedly, reaching a volume of EUR 2.4 billion compared to EUR 6 billion in the first quarter of 2001.

For the first quarter of 2002, a breakdown of the financial account according to *economic sectors* shows that both banks and nonbanks recorded capital outflows (the OeNB and banks: EUR 2.2 billion, the general government and other sector: EUR 1.8 billion). As measured by gross capital flows, the *banking system* raised its external assets by EUR 2.5 billion, while its external liabilities went up by EUR 290 million. The *general government* expanded its assets by EUR 2.6 billion and its external liabilities by EUR 6.7 billion, thus recording, on balance, a capital import of EUR 4.1 billion in the reporting quarter (compared to EUR 5.9 billion in the same period of 2001). In the quarter under review, the *other sector[1])* more than doubled its net outflows, which came to EUR 6 billion year on year.

When financial flows are split up into *interest-bearing[2])* and *venture capital-oriented[3]) investment,* it becomes evident that, in the first quarter of 2002, domestic investors mainly directed their investments (EUR 9.7 billion altogether) toward interest-bearing financial assets, which thus accounted for a fair share in Austrian total outward investment (71%).

Interest-bearing investments also dominated foreign investment in Austria, with nonresidents investing EUR 7.6 billion (80% of total inward investment) in this type of financial assets. Venture capital-oriented investment posted net capital inflows of EUR 2 billion over the reporting period.

3.1 Direct Investment

As the worldwide stock exchange boom was coming to an end in 2000, the wave of cross-border direct investment markedly abated as well. According to an OECD communication, the volume of OECD member states' capital trans-

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1   *Including other financial institutions, insurance companies and pension funds as well as enterprises and households.*

2   *Fixed-income debt instruments, deposits and loans, notwithstanding whether they are included in the categories direct investment, portfolio investment, other investment, or reserve assets.*

3   *Investment in equity stakes and equity securities.*

actions halved in 2001. Developments in Austria took a parallel course, with outward investment subsiding by 45% and inward investment by 31%. Given the continued weak stock exchange performance, subdued economic growth and shrinking profits, the year 2002 is not expected to bring about a new boom in foreign direct investment. In fact, at around EUR 870 million net, FDI in Austria remained clearly below the level recorded in previous years. Austrian direct investment abroad, by contrast, reached a record high at EUR 1.8 billion net (more than twice the amount reached in the comparable periods of 2000 and 2001).

Even when taking into account that results on the assets side have been essentially influenced by one individual transaction, the overall impression is that of surprisingly high investment activities. Gross investment to the tune of EUR 1.4 billion is contrasted by very modest disinvestments of EUR 140 million. Given the moderate profit distributions, reinvested earnings reached a record volume of EUR 370 million. Loans to affiliated enterprises and households' real estate purchases continue to play a subordinate role.

Aside from offshore financial centers in the Caribbean, Central and Eastern Europe remained an attractive location for Austrian investors, with the Slovak Republic and the countries of the former Yugoslavia, such as Slovenia, Croatia, and Bosnia-Herzegovina, attracting the lion's share of Austrian investment abroad in the first quarter of 2002.

Inward direct investment (EUR 870 million) was chiefly based on internal sources of finance, with 70% of net new investment attributable to reinvested earnings. Actual external funds amounted to EUR 410 million net (with gross new investment coming to EUR 590 million and disinvestments to EUR 180 million). Moreover, Austrian direct investment enterprises paid back intercompany loans to the amount of EUR 160 million, corresponding to disinvestments of the same amount. The bulk of inward investment (more than 70%) came again from Germany, with the Netherlands and the U.S.A. coming in second and third.

3.2 Portfolio Investment

On balance, cross-border transactions related to the acquisition and sale of securities resulted in capital exports of EUR 360 million in the first quarter of 2002. The corresponding gross values indicate that both Austrian investment in foreign securities (assets side) and nonresidents' investment in Austrian securities (liabilities side) reached the highest quarterly values in five years – volumes that are in fact comparable to the overall result of 2001. As in previous periods, gross capital flows from investment in shares, bonds and money market instruments dominated the financial account in the reporting period. Both on the assets and liabilities sides, debt securities account for more than 80% of portfolio investment transactions (in terms of volume).

A sectoral breakdown of portfolio investment abroad shows that the other sector – mainly institutional investors – made 58% of investments, while the general government and banks each account for around 22%. The majority of foreign investors were interested in securities issued by the Austrian government (54%) and banks (36%).

3.2.1 Portfolio Investment in Foreign Securities

In the first quarter of 2002, Austrian investors acquired foreign securities to the tune of EUR 13.1 billion, of which 60% were invested in bonds and notes, 23% in money market instruments, 14% in shares, and 3% in investment certificates. Austrian investors' main focus was on securities issued in the euro area (64%) and the U.S.A. (22%).

Domestic investors purchased *foreign equity securities* worth EUR 2.2 billion, of which EUR 1.9 billion worth of *shares,* in particular from the financial and industrial sectors. The most attractive targets for outward investment in shares were enterprises in the U.S.A. (41%), the euro area (23%) and Central and Eastern Europe (17%, with a focus on Poland). Investments in this area were predominantly made by institutional investors.

Investment in *foreign mutual funds shares* amounted to EUR 360 million in the first quarter of 2002. A breakdown by regions shows that Austrians were mainly interested in purchasing mutual funds shares issued in Luxembourg, followed by German and British issues. In the reporting period, domestic mutual funds, which constitute the largest group among investors in this field, preferred balanced funds and equity funds.

In acquiring foreign securities, Austrian investors typically concentrate on debt securities, which also played a dominant role during the quarter under review (EUR 11 billion), with *bonds and notes* accounting for 60% of cross-border investments in securities (EUR 8 billion), which marks the highest quarterly result in a five-year observation period. 70% of debt securities purchased were euro area issues, with German, Italian and Greek issues being of particular interest to Austrians. Moreover, domestic investors focused on U.S. issues (17% of investments). The other sector (just under 70%, mostly institutional investors) and Austrian banks (32%) were the key investors in this category. Investments were almost exclusively made in euro-denominated securities and only to a smaller extent in U.S. dollar-denominated debt securities (9%).

Securities Transactions by Financial Instruments[1]
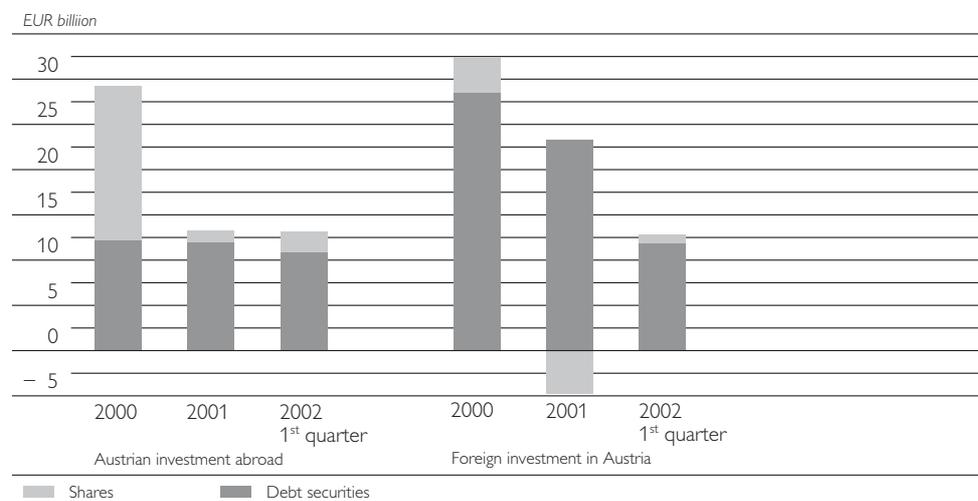
Source: OeNB.
[1] 2000: Final data. 2001: Revised data. 2002: Provisional data.

Austrians purchased *foreign money market instruments,* mainly commercial paper and certificates of deposit, to the tune of EUR 3 billion. Investors concentrated mainly on euro area issues (Ireland, Germany, the Netherlands, and Italy) and on paper issued in the United Kingdom and the Cayman Islands. Investments almost exclusively focused on euro-denominated securities, with U.S. dollar-denominated securities accounting for no more than about 2% of investments. The major investor in foreign money market paper was the Austrian government.

3.2.2 Portfolio Investment in Domestic Securities

In the first quarter of 2002, foreign investors acquired Austrian securities worth EUR 12.8 billion, i.e. just like external assets, external liabilities had augmented significantly faster than in the previous quarters. Debt securities (86%) were most popular with investors, with money market instruments, mutual funds shares and shares making up 7%, 5%, and 2% of investments, respectively.

Of the EUR 890 million worth of *domestic equity securities* sold to foreign investors, *domestic shares* accounted for EUR 210 million. The majority of investment capital went into issues by enterprises and banks.

Foreign investors bought *domestic mutual funds shares* to the tune of EUR 690 million, which corresponds to more than 50% of annual sales in 2001. Investors were chiefly interested in domestic balanced funds (77%) and money market funds.

As in previous years, foreign investors showed a clear preference for Austrian debt securities; the transaction value of EUR 11 billion recorded in the reporting quarter is the highest value in five years. Aside from euro-denominated issues (more than 50%), nonresidents mainly acquired U.S. dollar-denominated securities (27%) and securities issued in Swiss francs (12%). A breakdown of debt security investment by sectors indicates that investors showed an almost equal interest in issues by the general government and by Austrian banks. In the first quarter of 2002, foreigners invested EUR 6,5 billion in new issues or reopened issues of the Republic of Austria.

Government Bond Syndication and Tender Offers

in the First Quarter of 2002[1])

	ISIN	External transactions
		EUR million
5.0% Federal government bond 2002−2012/1/144A	AT0000385356	4,557
5.875% Federal government bond 1996−2006/7	AT0000383518	817
5.5% Federal government bond 2000−2007/144A	AT0000384953	1,079
Total		6,454

Source: OeNB.
[1]) *Transaction values: + = sale abroad.*

Nonresidents spent EUR 870 million on *domestic money market instruments.* Foreign investors purchased short-term bonds issued by the Republic of Austria while, at the same time, banking sector commercial paper and certificates of deposit were redeemed. In this category, nonresidents concentrated on securities denominated in U.S. dollar (more than 50% of investments).

3.3 Other Investment

The *other investment* item of the Austrian financial account registered a net capital outflow of EUR 3.1 billion in the first quarter of 2002, remaining slightly below the result achieved in the same period of the previous year (EUR 4.4 billion).

Both sides of the balance sheet registered a slowdown in investment activities, recording capital inflows of EUR 1.2 billion on the assets side and capital outflows to the tune of EUR 4.3 billion on the liabilities side. This extraordinarily large reduction of liabilities in the reporting quarter was mainly attributable to banks, which decreased their short-term liabilities from currency and deposits by EUR 5.6 billion, of which U.S. dollar-denominated liabilities accounted for EUR 2.8 billion and euro-denominated liabilities for EUR 2.3 billion.

3.4 Financial Derivatives

The financial derivatives position basically includes options, futures contracts and swaps, which are either based on capital products (e.g. foreign exchange assets, securities) or on interest rate products. On the one hand, transaction values refer to the buying and selling of securities-based financial derivatives and, on the other, to transactions resulting from option payments (including premiums) in the course of OTC deals and/or from variation margin payments for futures contracts and swap payments.

The financial derivatives subaccount closed the first quarter of 2002 with net capital inflows of EUR 500 million. Interest rate derivatives, which are contained in this item, accounted for capital inflows of EUR 300 million.

3.5 Reserve Assets

In the first quarter of 2002, reserve assets climbed by EUR 120 million through transactions.

Reserve asset securities worth EUR 480 million were purchased, while liabilities from deposits were reduced by EUR 350 million. In the observation period, the reserve position in the Fund shrank slightly, by EUR 10 million.

4 Annex

Table 1

Balance of Payments Summary

	1st quarter 2001[1])	1st quarter 2002[2])	Annual change
	EUR million		
Current account	+ 188	+1,219	+1,031
Goods, services and income	+ 397	+1,815	+1,418
Goods and services	+1,304	+2,436	+1,132
Goods	− 914	+ 724	+1,638
Services	+2,218	+1,712	− 506
Travel	+1,948	+2,585	+ 637
Other services items	+ 270	− 873	−1,143
Transportation	+ 459	+ 568	+ 109
thereof international passenger transport	+ *285*	+ *326*	+ *41*
Construction services	+ 88	+ 36	− 52
Financial services	+ 75	+ 50	− 25
Royalties and license fees	− 169	− 166	+ 3
Other business services	+ 524	+ 496	− 28
thereof merchanting	+ *335*	+ *314*	− *21*
Other services	+ 133	+ 167	+ 34
Unclassified transactions	− 840	−2,024	−1,184
Income	− 906	− 621	+ 285
Compensation of employees	+ 130	+ 132	+ 2
Investment income	−1,036	− 753	+ 283
Current transfers	− 209	− 596	− 387
General government	− 144	− 218	− 74
Private sector	− 65	− 377	− 312
Capital and financial account	− 650	−4,072	−3,422
Capital account	− 62	− 76	− 14
General government	+ 45	− 39	− 84
Private sector	− 67	− 48	+ 19
Acquisition/disposal of nonproduced, nonfinancial assets	− 40	+ 10	+ 50
Financial account	− 588	−3,996	−3,408
Direct investment	+ 465	− 886	−1,351
Portfolio investment	+ 994	− 357	−1,351
Other investment	−4,440	−3,134	+1,306
Financial derivatives	+ 483	+ 500	+ 17
Reserve assets[3])	+1,909	− 120	−2,029
Errors and omissions	+ 462	+2,853	+2,391

Source: OeNB.
[1]) Revised data.
[2]) Provisional data.
[3]) Oesterreichische Nationalbank: Gold and foreign exchange, reserve position in the Fund, SDRs, etc.; increase: − / decrease: +.

Table 2

Merchandise Exports and Imports

as Recorded in the Foreign Trade Statistics

Goods by geographic area[1])

	1st quarter 2002					
	Exports		Imports		Balance	
	Annual change	Share of total exports	Annual change	Share of total imports		Annual change
	%				EUR million	
EU	− 2.1	62.7	− 3.6	66.4	− 759	+ 213
Euro area	− 2.6	55.6	− 3.6	61.7	− 1,206	+ 164
thereof:						
Germany	*− 4.6*	*32.4*	*− 3.3*	*41.2*	*− 1,682*	*− 29*
Italy	*+ 2.3*	*8.9*	*− 7.9*	*7.1*	*+ 338*	*+ 153*
France	*− 1.7*	*4.9*	*− 4.8*	*3.9*	*+ 190*	*+ 21*
Non-euro area countries	+ 4.2	44.4	− 9.0	38.3	+ 1,143	+ 1,066
thereof:						
Switzerland						
and Liechtenstein	*− 4.3*	*5.2*	*− 1.4*	*3.3*	*+ 352*	*− 35*
Eastern Europe[2])	*+ 6.8*	*16.8*	*− 5.8*	*13.0*	*+ 704*	*+ 355*
U.S.A.	*+ 6.7*	*5.2*	*+ 6.5*	*5.7*	*− 115*	*− 5*
Japan	*−10.8*	*1.1*	*−20.7*	*2.0*	*− 183*	*+ 77*
Total	+ 0.3	100.0	− 5.8	100.0	− 63	+ 1,231

Source: Statistics Austria.
[1]) *Geographic areas as defined by WIFO.*
[2]) *Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovak Republic, Ukraine, countries of the former Yugoslavia.*

Table 3

Travel and International Passenger Transport

	1st quarter 2001[1])	1st quarter 2002[2])	Annual change	
	EUR million		%	
Travel				
Receipts	3,763	4,028	+ 265	+ 7.0
Expenses	1,815	1,443	− 372	−20.5
Balance	1,948	2,585	+ 637	+32.7
International passenger transport				
Receipts	524	499	− 25	− 4.8
Expenses	239	173	− 66	−27.6
Balance	285	326	+ 41	+14.4
	1,000		*%*	
Foreign tourist bednights	*29,716*	*31,708*	*+1,991*	*+ 6.7*

Source: OeNB, Statistics Austria.
[1]) *Revised data.*
[2]) *Provisional data.*

Table 4

Foreign Tourist Bednights by Country of Origin

	1st quarter 2002			
	Overnight stays	Annual change		Share
	1,000		%	
Germany	19,568	+ 1,233	+ 6.7	61.7
Netherlands	4,196	+ 175	+ 4.3	13.2
United Kingdom	1,281	+ 165	+14.8	4.0
Belgium, Luxembourg	887	+ 45	+ 5.3	2.8
Switzerland, Liechtenstein	967	+ 100	+11.5	3.0
Denmark	572	+ 24	+ 4.4	1.8
Italy	510	+ 68	+15.3	1.6
France	368	+ 28	+ 8.3	1.2
Sweden	318	+ 8	+ 2.6	1.0
Spain	66	+ 9	+15.6	0.2
Poland	500	+ 28	+ 5.9	1.6
Hungary	424	+ 47	+12.5	1.3
Czech Republic	393	+ 29	+ 8.1	1.2
Croatia	156	+ 1	+ 0.7	0.5
C.I.S.	225	+ 39	+20.8	0.7
Slovenia	106	− 3	− 2.8	0.3
Slovak Republic	79	+ 10	+14.0	0.2
U.S.A.	240	− 43	−15.0	0.8
Japan	68	− 18	−20.6	0.2
Other countries	785	+ 48	+ 6.5	2.5
Total	31,708	+1,991	+ 6.7	100.0
Memorandum item: Austrian tourists	*8,722*	*+ 3*	*+ 0.0*	*x*

Source: Statistics Austria.

Table 5

Investment Income

	1st quarter 2001[1])	1st quarter 2002[2])	Annual change
	EUR million		
Net investment income[3])	−1,036	− 753	+283
Investment income receipts	3,361	3,234	−127
Investment income payments	4,397	3,987	−410
Net direct investment income[3])	− 420	− 394	+ 26
Income on direct investment abroad	402	522	+120
Income on direct investment in Austria	823	915	+ 92
Net portfolio investment income[3])	− 815	− 887	− 72
Income on foreign equity securities	35	43	+ 8
Income on domestic equity securities	32	55	+ 23
Income on foreign bonds and notes	1,122	1,217	+ 95
Income on domestic bonds and notes	1,868	2,073	+205
Income on foreign money market instruments	23	17	− 6
Income on domestic money market instruments	95	37	− 58
Net other investment income[3])	199	527	+328
Income on other investment, assets[4])	1,778	1,435	−343
Income on other investment, liabilities	1,579	908	−671
Investment income on foreign interest-bearing investment[5])	2,935	2,684	−251
Investment income on domestic interest-bearing investment[6])	3,546	3,018	−528
Investment income on foreign venture capital-oriented investment[7])	426	550	+124
Investment income on domestic venture capital-oriented investment[7])	851	970	+119
Memorandum item:			
Financial derivatives based on interest rate contracts, net[8])	*−432*	*303*	*+735*

Source: OeNB.
[1]) Revised data.
[2]) Provisional data.
[3]) Income on outward foreign investment less income on inward foreign investment.
[4]) Income on deposits, loans and reserve assets.
[5]) Income on debt securities, deposits, loans and reserve assets.
[6]) Income on debt securities, deposits and loans.
[7]) Income on direct investment and equity securities.
[8]) Included in the financial account, financial derivatives.

Table 6

Financial Account

	2000[1]	2001[2]	1st quarter 2001[2]	1st quarter 2002[3]
	EUR million, net			
Financial account	4,679	4,194	− 588	− 3,996
Assets	−52,276	−21,762	− 8,463	−13,534
Liabilities	56,955	25,957	7,875	9,538
Direct investment	3,365	3,195	465	− 886
Direct investment abroad	− 6,230	− 3,408	− 690	− 1,754
Equity capital	− 5,388	− 2,613	− 785	− 1,296
Reinvested earnings	− 129	− 705	81	− 373
Other capital	− 713	− 90	14	85
Direct investment in Austria	9,595	6,603	1,155	869
Equity capital	8,494	4,115	541	414
Reinvested earnings	944	1,562	688	610
Other capital	156	927	− 74	− 156
Portfolio investment	3,229	5,164	994	− 357
Portfolio investment in foreign securities	−29,167	−13,267	− 4,956	−13,135
Equity securities	−16,959	− 1,277	3,304	− 2,217
thereof: mutual funds shares	− 5,745	− 1,365	− 178	− 358
Bonds and notes	−11,441	−12,403	− 6,883	− 7,941
Money market instruments	− 767	412	− 1,377	− 2,977
Portfolio investment in domestic securities	32,395	18,431	5,950	12,778
Equity securities	3,857	− 4,787	− 5,133	893
thereof: mutual funds shares	1,205	1,004	253	687
Bonds and notes	26,738	25,989	8,548	11,020
Money market instruments	1,801	− 2,771	2,535	865
Other investment	− 2,489	− 5,885	− 4,440	− 3,134
Assets	−17,187	− 6,699	− 5,141	1,158
Trade credits	− 2,234	308	− 105	− 70
Loans	− 9,948	− 6,808	− 3,185	− 2,134
Currency and deposits	− 4,994	562	− 1,750	3,211
Other assets	− 11	− 762	− 101	151
Liabilities	14,698	814	701	− 4,292
Trade credits	502	− 562	− 275	− 44
Loans	4,302	719	931	932
Currency and deposits	9,686	649	83	− 5,001
Other liabilities	208	9	− 37	− 179
Financial derivatives	− 263	− 347	483	500
Reserve assets[4]	838	2,067	1,909	− 120
Memorandum item: Interest-bearing investment	*13,760*	*8,262*	*793*	*− 2,048*
Assets	*−29,900*	*−16,804*	*−10,986*	*− 9,669*
Liabilities	*43,660*	*25,067*	*11,779*	*7,621*
Sectoral breakdown **Banks (including the OeNB)**	18,191	− 1,943	− 3,783	− 2,153
Assets	−17,532	−11,568	− 8,780	− 2,445
Liabilities	35,723	9,624	4,997	293
General government	8,465	9,781	5,910	4,094
Assets	− 2,948	− 361	− 720	− 2,598
Liabilities	11,413	10,143	6,630	6,692
Other sectors	−21,976	− 3,644	− 2,716	− 5,938
Assets	−31,796	− 9,834	1,037	− 8,491
Liabilities	9,820	6,189	− 3,753	2,553

Source: OeNB.
[1] Final data.
[2] Revised data.
[3] Provisional data.
[4] Oesterreichische Nationalbank: Gold and foreign exchange, reserve position in the Fund, SDRs, etc.; increase: − / decrease: +.

Table 7

Financial Account by Region[1])

	Investment in/ from the euro area[2])			Investment in/ from non-euro area countries		
	2001[2])	1st quarter 2001[2])	1st quarter 2002[3])	2001[2])	1st quarter 2001[2])	1st quarter 2002[3])
	EUR million, net					
Financial account	− 317	1,412	− 350	4,511	−2,000	−3,646
Assets	− 6,942	− 495	−7,486	−14,820	−7,968	−6,048
Liabilities	6,625	1,907	7,137	19,332	5,968	2,401
Direct investment	2,448	1,647	484	747	−1,182	−1,370
Direct investment abroad	− 77	979	− 260	− 3,331	−1,669	−1,494
Direct investment in Austria	2,525	668	744	4,078	487	125
Portfolio investment	6,638	2,874	−1,680	− 1,474	−1,880	1,323
Portfolio investment in foreign securities	− 5,144	− 556	−8,405	− 8,123	−4,400	−4,730
Portfolio investment in domestic securities	11,781	3,430	6,725	6,650	2,520	6,053
Other investment	−10,096	−3,991	955	4,211	− 449	−4,089
Assets	− 2,157	−2,112	1,460	− 4,542	−3,029	− 302
Liabilities	− 7,939	−1,880	− 505	8,753	2,581	−3,787
Financial derivatives	426	608	− 105	− 773	− 125	605
Reserve assets[4])	×	×	×	2,067	1,909	− 120

Source: OeNB.

[1]) *While for foreign direct investment in Austria and other inward investment it is possible to establish the identity of the foreign investors, in the case of portfolio investment one can only determine the country via which the transaction has been effected. This means that it is not possible to provide a current and/or completely reliable classification of creditors. Ongoing studies, however, show that the largest volume of Austrian securities sold to the euro area are government bonds sold to foreign banks in the course of tender or syndication offers. Since, in this case, the secondary market generated only a relatively small volume of cross-border transactions, the regional structure of the basic data derived from the reporting system on foreign exchange statistics can be regarded as sufficiently conclusive.*

[2]) *Revised data.*
[3]) *Provisional data.*
[4]) *Oesterreichische Nationalbank: Gold and foreign exchange, reserve position in the Fund, SDRs, etc.; increase: − / decrease: +.*

Austria's International Investment Position in 2001[1])

Patricia Fahrngruber

I Overview

Austria's International Investment Position (IIP) reflects the financial assets held by Austrians abroad and by nonresidents in Austria. Both assets and liabilities expanded far less in 2001 than in the two preceding years. This slowdown may be traced to the reduced need for funds in a cooling economy, and to the advanced stage reached in the regional portfolio diversification process which set in after the introduction of the euro. On the reporting date December 31, 2001, foreign assets were up by 8% or EUR 22.5 billion on the previous year and foreign liabilities were 10% or EUR 31.8 billion higher. Austrians' external assets came to EUR 303.5 billion on the reference date, and nonresidents' financial assets in Austria amounted to EUR 353.1 billion (see table 1a).

Chart 1

Austria's External Assets and Liabilities[1])

Source: OeNB.
[1]) Final data until 2000, revised data from 2001.
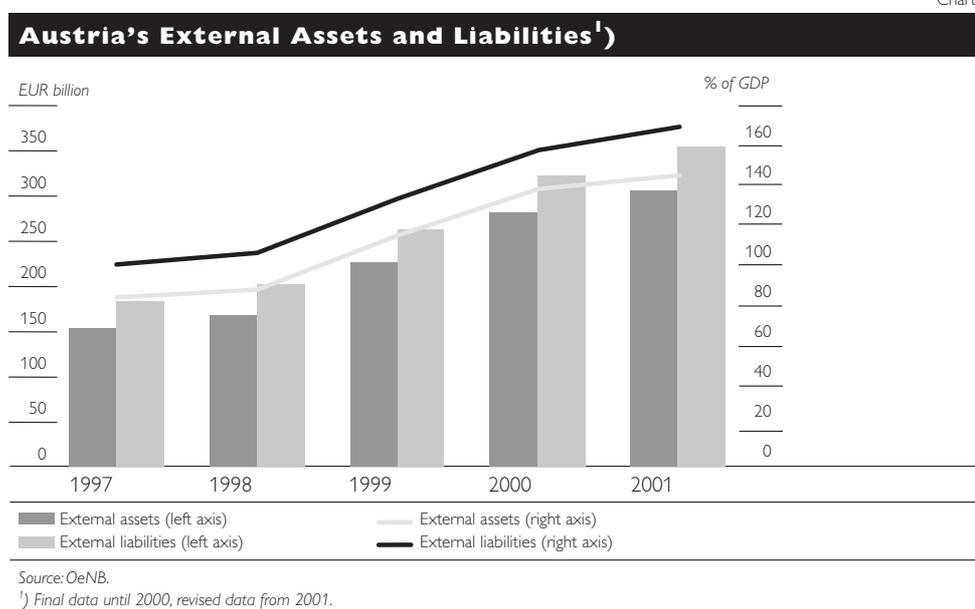
A breakdown of external assets and liabilities shows that on both sides of the account, portfolio investment continued to predominate among financing instruments in 2001. Portfolio investment made up 45% of external assets and 55% of external liabilities. Within this category, investment shifted toward debt securities in the course of the review period (see table 1b). The internationalization ratio — this ratio expresses external assets and/or liabilities as a percentage of GDP — was higher at the end of 2001 than a year earlier on both sides of the IIP. On the reporting date of December 31, 2002, the ratio came to 144% of GDP for external assets and 168% of GDP for external liabilities (see table 2), which is high by international standards.

The net IIP — the balance of Austria's external assets and external liabilities — slipped further into deficit, augmenting from roughly EUR 40 billion at year-end 2000 to EUR 50 billion at the end of 2001. This outcome reflects higher shortfalls in the categories portfolio and direct investment and a switch into

1   Editorial close: August 19, 2002.

surplus of other investment. Transactions were responsible for approximately half the net changes, price and exchange rate developments for the other half. Prices and exchange rates had a different impact on each financing instrument (see table 3).

Limiting the analysis of Austria's external assets and liabilities to external debt is also quite informative. This analysis takes only those financial assets and liabilities into account that are not equity based.[1] External debt deteriorated by some EUR 9 billion to –EUR 69.2 billion at end-2001. A closer look at the development of securities with different maturities, i.e. short-term[2] or long-term[3] maturities, provides the following insights: In terms of original maturities, the share of short-term external assets declined from 37% at end-2000 to 35% at the reporting date. The share of short-term liabilities also shrank, dropping from 41% to 37%. Long-term debt securities account for an especially large portion of portfolio investment. EUR 171.1 billion (around 95%) of all debt securities (market value: EUR 179.2 billion) held by nonresidents were long-term securities (see table 5).

2 Austria's External Assets

On the reporting date, December 31, 2001, residents held external assets of EUR 303.5 billion. Moreover, the stock of Austria's outward *foreign direct investment* (FDI)[4] had a value of EUR 31.5 billion, 12% more than at the end of 2000. Attaining a market value of EUR 135.2 billion (+9%) at the end of 2001, *portfolio investment* represented the lion's share of Austria's external assets. Austrian investors enlarged their holdings of debt securities by a solid 20% to EUR 92.2 billion and trimmed their equity holdings by 9% to EUR 41.9 billion (market values). Money market paper continued to play a subordinate role, with stocks contracting from EUR 1.7 billion to EUR 1.1 billion at the end of 2001. Austrian external assets in the form of *loans, deposits and other claims* climbed by 9% on the end-2000 figure, coming to EUR 119.1 billion on December 31, 2001. *Reserve assets* fell from EUR 18.9 billion to EUR 17.7 billion (–6%); stocks of foreign securities dipped from EUR 10.5 billion to EUR 9.4 billion.

A regional breakdown of Austria's international investment at end-2001 shows that at 45%, the euro area's share of Austrian cross-border financial investment was identical to the year-earlier result. Securities issued by euro area countries still accounted for the bulk of financial instruments, 58%, on December 31, 2001 (see table 4). The euro area's share of deposits and lending dropped marginally to 41% at the end of 2001. Austrian external assets in the category of direct investment concentrated on non-euro area countries, notably
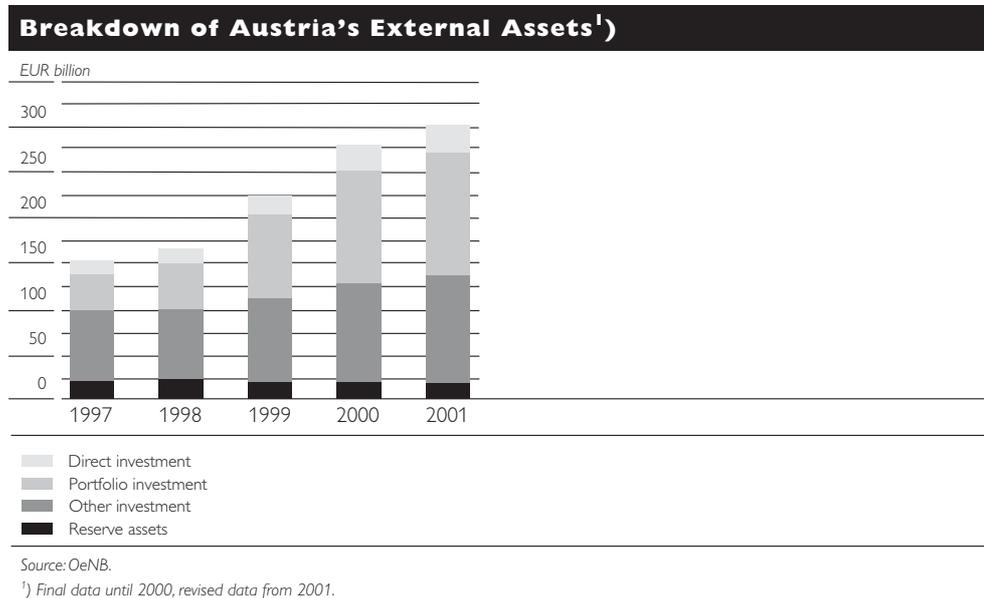
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1   *According to international convention, external debt comprises gross assets excluding equity capital and reinvested earnings, equity components, monetary gold and SDRs (nonequity assets), or gross liabilities excluding equity components (nonequity liabilities).*

2   *Maturities of up to and including one year.*

3   *Maturities of over one year.*

4   *In line with international usage, the direct investment figures published as part of the IIP also contain transnational real estate holdings. By contrast, the detailed data on direct investment stocks (FDI survey) published in Focus on Austria 2/2002 do not include real estate investment (for quantitative data, see table 8 in the annex).*

Chart 2

Breakdown of Austria's External Assets[1])

EUR billion

Legend:
- Direct investment
- Portfolio investment
- Other investment
- Reserve assets

Source: OeNB.
[1]) *Final data until 2000, revised data from 2001.*

Central and Eastern Europe (the CEECs). The share of Austria's direct investment in the euro area came to 29% compared with 34% in the CEECs.

Broken down by sectors, *banks* had EUR 137.6 billion of external assets at the reporting date, nearly the same as *other sectors[1])*, which held EUR 137.2 billion (see table 6). These two categories accounted for some 45% each of Austria's total external assets. By comparison, banks had held 43%, other sectors 46% at the end of 2000. Most of banks' foreign assets consisted of deposits and loans as recorded on December 31, 2001. FDI stocks amounted to EUR 3.5 billion, foreign securities, mostly debt securities, ran to EUR 38.5 billion (see table 7). Other sectors held three quarters of their external assets in the form of securities, whose share totaled EUR 91.1 billion and consisted mostly of debt securities. Within the category other sectors, institutional investors (other financial institutions) held over 50% of the external assets, followed by nonfinancial corporations (37%) and households (10%). The *general government* sector boosted its external asset portfolios from EUR 3.5 billion at the end of 2000 to EUR 4.2 billion at end-2001 whereas the OeNB rolled back its stocks from EUR 26.6 billion to EUR 24.5 billion.

3 Austria's External Liabilities

While Austria's external assets came to EUR 303.5 billion on the reference date, its external liabilities were higher at EUR 353.1 billion. *Inward FDI* closed the year with stocks of EUR 40.2 billion, up by EUR 6.6 billion or 20% from year-end 2000. Like in the case of external assets, *portfolio investment* predominated among external liabilities. The market value of Austrian securities in nonresidents' portfolios ran to EUR 194.7 billion on the reporting date, 13% more than a year earlier. Foreign investors enlarged their holdings of debt securities from EUR 142.6 billion to EUR 171.1 billion and cut back their

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1   *Other sectors comprises other financial institutions, nonfinancial corporations and households.*

equity portfolios (market values) from EUR 21 billion to EUR 15.5 billion. Moreover, they pared their holdings of money market paper to EUR 8.2 billion (−14%). Nonresidents hiked their Austrian *deposits and loans* from EUR 114.6 billion to EUR 118.2 billion (+3%).

Chart 3

Breakdown of Austria's External Liabilities[1])

EUR billion

- Direct investment
- Portfolio investment
- Other investment

Source: OeNB.
[1]) *Final data until 2000, revised data from 2001.*

In a regional breakdown of Austria's external liabilities on December 31, 2001, the euro area accounted for an especially robust share of inward FDI — 65% — whereas the euro area's share of other investment was well short of 50%. While investors with holdings of inward FDI and other investment are easily identified, portfolio investment cannot be assigned reliably to the respective category, so that no regional analysis of portfolio investment can be provided.

In a sectoral breakdown, Austrian *banks* accounted for the largest rise (EUR 20.8 billion) in external liabilities in absolute terms. Their share of total external liabilities climbed further from 51% to 52%, reinforcing the predominant position of banks among lenders. Short-term deposits and lending abroad as well as securities issues remained Austrian banks' key external liabilities. The *general government's* external liabilities rose to EUR 88.2 billion, nudging this sector's share of total external liabilities up from 24% to 25%. Just like at the end of 2000, the bulk of the general government's cross-border liabilities consisted of long-term securities. The market participants grouped under *other sectors* closed with foreign liabilities of EUR 80.4 billion, most of which were attributable to nonfinancial corporations, followed by other financial institutions and finally by households.

Annex

Table 1a

Austria's International Investment Position

End-of-period stocks	Assets		Liabilities		Net	
	2000[1])	2001[2])	2000[1])	2001[2])	2000[1])	2001[2])
	EUR million					
Direct investment						
Equity capital and reinvested earnings	+ 25,419	+ 28,606	+ 32,070	+ 37,742	− 6,650	− 9,136
Other capital	+ 2,804	+ 2,894	+ 1,546	+ 2,473	+ 1,258	+ 421
Total	+ 28,223	+ 31,500	+ 33,616	+ 40,215	− 5,393	− 8,715
Portfolio investment						
Equity securities	+ 45,888	+ 41,876	+ 21,031	+ 15,502	+24,857	+26,374
Monetary authorities	+ 1,448	+ 1,133	+ 0	+ 0	+ 1,448	+ 1,133
General government	+ 60	+ 88	+ 0	+ 0	+ 60	+ 88
Banks	+ 2,050	+ 3,155	+ 3,002	+ 3,266	− 952	− 111
Other sectors	+ 42,330	+ 37,500	+ 18,029	+ 12,236	+24,301	+25,264
Debt securities	+ 78,433	+ 93,308	+152,082	+179,213	−73,649	−85,905
Bonds and notes	+ 76,708	+ 92,221	+142,600	+171,057	−65,892	−78,836
Monetary authorities	+ 2,992	+ 3,410	+ 0	+ 0	+ 2,992	+ 3,410
General government	+ 164	+ 611	+ 71,500	+ 82,528	−71,336	−81,917
Banks	+ 28,857	+ 34,900	+ 58,300	+ 70,621	−29,443	−35,721
Other sectors	+ 44,695	+ 53,300	+ 12,800	+ 17,908	+31,895	+35,392
Money market instruments	+ 1,725	+ 1,087	+ 9,482	+ 8,156	− 7,757	− 7,070
Monetary authorities	+ 676	+ 264	+ 0	+ 0	+ 676	+ 264
General government	+ 239	+ 75	+ 1,936	+ 1,499	− 1,697	− 1,424
Banks	+ 422	+ 403	+ 7,288	+ 6,626	− 6,866	− 6,223
Other sectors	+ 388	+ 345	+ 258	+ 31	+ 130	+ 314
Total	+124,320	+135,184	+173,113	+194,715	−48,793	−59,532
Other investment						
Trade credits	+ 5,892	+ 5,584	+ 4,013	+ 3,451	+ 1,879	+ 2,133
Loans	+ 58,715	+ 67,228	+ 17,228	+ 19,103	+41,487	+48,125
Monetary authorities	+ 100	+ 0	+ 1,029	+ 1,154	− 929	− 1,154
General government	+ 22	+ 10	+ 2,698	+ 3,095	− 2,676	− 3,085
Banks	+ 49,663	+ 57,376	+ 5,959	+ 5,914	+43,703	+51,462
thereof long-term	*+ 35,229*	*+ 39,782*	*+ 3,279*	*+ 3,989*	*+31,950*	*+35,793*
Other sectors	+ 8,930	+ 9,842	+ 7,542	+ 8,940	+ 1,388	+ 902
Currency and deposits	+ 38,652	+ 39,331	+ 89,673	+ 91,914	−51,022	−52,583
Monetary authorities[3])	+ 2,342	+ 1,884	+ 5,031	− 1,791	− 2,689	+ 3,675
General government	+ 1,359	+ 1,603	+ 0	+ 0	+ 1,359	+ 1,603
Banks	+ 34,400	+ 34,855	+ 84,642	+ 93,705	−50,243	−58,851
thereof short-term	*+ 28,967*	*+ 28,559*	*+ 80,262*	*+ 87,551*	*−51,295*	*−58,993*
Other sectors	+ 550	+ 990	+ 0	+ 0	+ 550	+ 990
Other claims, other liabilities	+ 6,345	+ 6,985	+ 3,725	+ 3,747	+ 2,619	+ 3,238
Monetary authorities	+ 118	+ 118	+ 0	+ 0	+ 118	+ 118
General government	+ 1,685	+ 1,793	+ 969	+ 1,075	+ 716	+ 718
Banks	+ 2,877	+ 3,431	+ 646	+ 583	+ 2,231	+ 2,848
Other sectors	+ 1,664	+ 1,643	+ 2,110	+ 2,089	− 446	− 447
Total	+109,603	+119,128	+114,640	+118,215	− 5,037	+ 913
Financial derivatives	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0
Reserve assets						
Monetary gold[4])	+ 3,555	+ 3,519	×	×	+ 3,555	+ 3,519
Special Drawing Rights	+ 144	+ 264	×	×	+ 144	+ 264
Reserve position in the Fund	+ 675	+ 942	×	×	+ 675	+ 942
Foreign exchange	+ 14,500	+ 12,985	×	×	+14,500	+12,985
Currency and deposits	+ 3,952	+ 3,567	×	×	+ 3,952	+ 3,567
with monetary authorities	+ 2,723	+ 2,216	×	×	+ 2,723	+ 2,216
with foreign banks	+ 1,229	+ 1,351	×	×	+ 1,229	+ 1,351
Securities	+ 10,548	+ 9,418	×	×	+10,548	+ 9,418
Equity securities	+ 0	+ 0	×	×	+ 0	+ 0
Bonds and notes	+ 8,612	+ 7,416	×	×	+ 8,612	+ 7,416
Money market instruments	+ 1,936	+ 2,002	×	×	+ 1,936	+ 2,002
Financial derivatives	+ 0	+ 0	×	×	+ 0	+ 0
Other sectors	+ 0	+ 0	×	×	+ 0	+ 0
Total	+ 18,874	+ 17,710	×	×	+18,874	+17,710
External assets or liabilities	+281,020	+303,522	+321,368	+353,145	−40,348	−49,623
Nonequity assets or liabilities	+207,736	+230,695	+268,268	+299,901	−60,532	−69,207

Source: OeNB.
[1]) *Final data.*
[2]) *Revised data.*
[3]) *Liabilities with a negative sign may result from transactions processed via the ESCB TARGET system, for which special rules apply.*
[4]) *Valuation at the market price.*

Table 1b

Austria's International Investment Position – Structural Data

End-of-period stocks	Assets		Liabilities	
	2000[1])	2001[2])	2000[1])	2001[2])
	% of external assets or liabilities			
Direct investment				
Equity capital and reinvested earnings	9.0	9.4	10.0	10.7
Other capital	1.0	1.0	0.5	0.7
Total	10.0	10.4	10.5	11.4
Portfolio investment				
Equity securities	16.3	13.8	6.5	4.4
Monetary authorities	0.5	0.4	0.0	0.0
General government	0.0	0.0	0.0	0.0
Banks	0.7	1.0	0.9	0.9
Other sectors	15.1	12.4	5.6	3.5
Debt securities	27.9	30.7	47.3	50.7
Bonds and notes	27.3	30.4	44.4	48.4
Monetary authorities	1.1	1.1	0.0	0.0
General government	0.1	0.2	22.2	23.4
Banks	10.3	11.5	18.1	20.0
Other sectors	15.9	17.6	4.0	5.1
Money market instruments	0.6	0.4	3.0	2.3
Monetary authorities	0.2	0.1	0.0	0.0
General government	0.1	0.0	0.6	0.4
Banks	0.2	0.1	2.3	1.9
Other sectors	0.1	0.1	0.1	0.0
Total	44.2	44.5	53.9	55.1
Other investment				
Trade credits	2.1	1.8	1.2	1.0
Loans	20.9	22.1	5.4	5.4
Monetary authorities	0.0	0.0	0.3	0.3
General government	0.0	0.0	0.8	0.9
Banks	17.7	18.9	1.9	1.7
thereof long-term	*12.5*	*13.1*	*1.0*	*1.1*
Other sectors	3.2	3.2	2.3	2.5
Currency and deposits	13.8	13.0	27.9	26.0
Monetary authorities	0.8	0.6	1.6	− 0.5
General government	0.5	0.5	0.0	0.0
Banks	12.2	11.5	26.3	26.5
thereof short-term	*10.3*	*9.4*	*25.0*	*24.8*
Other sectors	0.2	0.3	0.0	0.0
Other claims, other liabilities	2.3	2.3	1.2	1.1
Monetary authorities	0.0	0.0	0.0	0.0
General government	0.6	0.6	0.3	0.3
Banks	1.0	1.1	0.2	0.2
Other sectors	0.6	0.5	0.7	0.6
Total	39.0	39.2	35.7	33.5
Financial derivatives	0.0	0.0	0.0	0.0
Reserve assets				
Monetary gold	1.3	1.2	×	×
Special Drawing Rights	0.1	0.1	×	×
Reserve position in the Fund	0.2	0.3	×	×
Foreign exchange	5.2	4.3	×	×
Currency and deposits	1.4	1.2	×	×
with monetary authorities	1.0	0.7	×	×
with foreign banks	0.4	0.4	×	×
Securities	3.8	3.1	×	×
Equity securities	0.0	0.0	×	×
Bonds and notes	3.1	2.4	×	×
Money market instruments	0.7	0.7	×	×
Financial derivatives	0.0	0.0	×	×
Other sectors	0.0	0.0	×	×
Total	6.7	5.8	×	×
External assets or liabilities	100.0	100.0	100.0	100.0
Nonequity assets or liabilities	73.9	76.0	83.5	84.9

Source: OeNB.
[1]) *Final data.*
[2]) *Revised data.*

Table 2

Austria's International Investment Position – Key Positions

| | End-of-period stocks | | | | |
	EUR million	% of GDP	% of exports of goods and services	% of external liabilities	% of nonequity liabilities
External assets					
1997[1]	152,598	83.6	199.8	83.6	×
1998[1]	166,414	87.6	201.3	82.4	×
1999[1]	224,992	114.4	251.0	85.9	×
2000[1]	281,020	137.2	273.7	87.4	×
2001[2]	303,522	144.4	278.4	85.9	×
External liabilities					
1997[1]	182,620	100.1	239.1	×	×
1998[1]	201,936	106.3	244.2	×	×
1999[1]	261,789	133.1	292.1	×	×
2000[1]	321,368	156.9	313.0	×	×
2001[2]	353,145	168.0	324.0	×	×
Nonequity assets					
1997[1]	127,308	69.8	166.7	×	84.3
1998[1]	135,280	71.2	163.6	×	79.6
1999[1]	175,363	89.2	195.7	×	78.2
2000[1]	207,736	101.4	202.3	×	77.4
2001[2]	230,695	109.8	211.6	×	76.9
Nonequity liabilities					
1997[1]	150,963	82.7	197.7	82.7	×
1998[1]	170,054	89.5	205.7	84.2	×
1999[1]	224,113	114.0	250.0	85.6	×
2000[1]	268,268	131.0	261.2	83.5	×
2001[2]	299,901	142.7	275.1	84.9	×
Net investment position					
1997[1]	− 30,021	16.5	39.3	16.4	×
1998[1]	− 35,522	18.7	43.0	17.6	×
1999[1]	− 36,797	18.7	41.1	14.1	×
2000[1]	− 40,348	19.7	39.3	12.6	×
2001[2]	− 49,623	23.6	45.5	14.1	×
Net external debt					
1997[1]	− 23,655	13.0	31.0	×	15.7
1998[1]	− 34,774	18.3	42.1	×	20.4
1999[1]	− 48,751	24.8	54.4	×	21.8
2000[1]	− 60,532	29.6	58.9	×	22.6
2001[2]	− 69,207	32.9	63.5	×	23.1

Source: OeNB.
[1] Final data.
[2] Revised data.

Table 3

Austria's International Investment Position – Change in the Position

	end-2000 stocks[1])	Changes in 2001			end-2001 stocks[2])
		total	transactions	price and exchange rate changes	
	EUR million				
Direct investment	+ 28,223	+ 3,277	+ 3,408	− 131	+ 31,500
Portfolio investment	+124,320	+10,863	+13,267	−2,404	+135,184
Other investment	+109,603	+ 9,526	+ 6,699	+2,826	+119,128
Financial derivatives	+ 0	+ 0	+ 0	+ 0	+ 0
Reserve assets	+ 18,874	− 1,164	− 2,067	+ 903	+ 17,710
External assets	+281,020	+22,502	+21,308	+1,194	+303,522
Direct investment	+ 33,616	+ 6,599	+ 6,603	− 4	+ 40,215
Portfolio investment	+173,113	+21,602	+18,431	+3,171	+194,715
Other investment	+114,640	+ 3,575	+ 814	+2,761	+118,215
Financial derivatives	+ 0	+ 0	+ 0	+ 0	+ 0
External liabilities	+321,368	+31,777	+25,849	+5,928	+353,145
Direct investment	− 5,393	− 3,323	− 3,195	− 127	− 8,715
Portfolio investment	− 48,793	−10,739	− 5,164	−5,575	− 59,532
Other investment	− 5,037	+ 5,950	+ 5,885	+ 66	+ 913
Financial derivatives	+ 0	+ 0	+ 0	+ 0	+ 0
Reserve assets	+ 18,874	− 1,164	− 2,067	+ 903	+ 17,710
Net investment position	− 40,348	− 9,275	− 4,541	−4,734	− 49,623

Source: OeNB.
[1]) *Final data.*
[2]) *Revised data.*

Table 4

Austria's International Investment Position – Regional Breakdown

	end-2001 stock[1])						
	total	vis-à-vis EU-15	vis-à-vis the euro area	*thereof vis-à-vis Germany*	vis-à-vis non-euro area residents	*thereof*	
						vis-à-vis Central and Eastern Europe	*vis-à-vis the U.S.A.*
	EUR million						
Direct investment	31,500	12,007	9,008	*5,881*	22,492	*10,777*	*2,409*
Portfolio investment	135,184	89,872	78,082	*37,134*	57,101	*5,497*	*21,150*
Equity securities	41,876	23,788	20,448	*9,008*	21,429	*2,137*	*11,783*
Debt securities	93,308	66,084	57,635	*28,126*	35,673	*3,360*	*9,367*
Other investment	119,128	68,500	49,200	*23,000*	69,928	*20,891*	*5,830*
thereof currency and deposits	*39,331*	*35,076*	*26,084*	*10,701*	*13,248*	*570*	*1,156*
Financial derivatives	0	0	0	*0*	0	*0*	*0*
Reserve assets	17,710	×	0	*0*	17,710	*x*	*x*
External assets	303,522	×	136,291	*66,015*	167,232	*x*	*x*
Direct investment	40,215	31,627	25,978	*18,109*	14,237	*392*	*2,597*
Portfolio investment	194,715	×	×	*x*	×	*x*	*x*
Other investment	118,215	64,068	50,288	*27,579*	67,927	*8,517*	*13,563*
thereof currency and deposits	*91,914*	*47,256*	*36,837*	*19,511*	*55,077*	*7,884*	*9,634*
Financial derivatives	0	0	0	*0*	0	*0*	*0*
External liabilities	353,145	×	×	*x*	×	*x*	*x*

Source: OeNB.
[1]) Revised data.

Table 5

Austria's International Investment Position – Maturity Breakdown (Original Maturities)

	2000[1])			2001[2])		
	total	short-term	long-term	total	short-term	long-term
End-of-period stocks in EUR million						
Direct investment	2,804	0	2,804	2,894	0	2,894
Portfolio investment	78,433	1,725	76,708	93,308	1,087	92,221
Other investment	108,300	69,720	38,580	117,725	73,975	43,750
Financial derivative	0	0	0	0	0	0
Reserve assets	18,199	5,888	12,311	16,768	5,569	11,199
Nonequity assets	207,736	77,333	130,403	230,695	80,630	150,064
Direct investment	1,546	0	1,546	2,473	0	2,473
Portfolio investment	152,082	9,482	142,600	179,213	8,156	171,057
Other investment	114,640	100,436	14,204	118,215	101,894	16,321
Financial derivative	0	0	0	0	0	0
Nonequity liabilities	268,268	109,918	158,350	299,901	110,050	189,851
Net external debt	− 60,532	− 32,585	− 27,947	− 69,207	− 29,420	− 39,787
Maturity bands in % of total						
Direct investment	100.0	0.0	100.0	100.0	0.0	100.0
Portfolio investment	100.0	2.2	97.8	100.0	1.2	98.8
Other investment	100.0	64.4	35.6	100.0	62.8	37.2
Financial derivatives	×	×	×	×	×	×
Reserve assets	100.0	32.4	67.6	100.0	33.2	66.8
Nonequity assets	100.0	37.2	62.8	100.0	35.0	65.0
Direct investment	100.0	0.0	100.0	100.0	0.0	100.0
Portfolio investment	100.0	6.2	93.8	100.0	4.6	95.4
Other investment	100.0	87.6	12.4	100.0	86.2	13.8
Financial derivatives	×	×	×	×	×	×
Nonequity liabilities	100.0	41.0	59.0	100.0	36.7	63.3
Net external debt	100.0	53.8	46.2	100.0	42.5	57.5

Source: OeNB.
[1]) *Final data.*
[2]) *Revised data.*

Table 6

Austria's International Investment Position – Sectoral Breakdown

	1997[1]	1998[1]	1999[1]	2000[1]	2001[2]
	End-of-period stocks in EUR millioin				
External assets or liabilities					
OeNB	+ 20,792	+ 23,647	+ 28,294	+ 26,551	+ 24,519
General government	+ 2,246	+ 2,667	+ 2,270	+ 3,530	+ 4,181
Banks	+ 81,186	+ 81,468	+102,131	+121,013	+137,576
Other sectors	+ 48,377	+ 58,628	+ 92,298	+129,927	+137,247
Other financial institutions	+ 18,461	+ 25,522	+ 48,880	+ 70,294	+ 73,112
Nonfinancial corporations	+ 22,227	+ 24,937	+ 32,836	+ 45,511	+ 50,155
Households	+ 7,689	+ 8,170	+ 10,582	+ 14,122	+ 13,980
External assets	+152,601	+166,410	+224,992	+281,020	+303,522
OeNB[3]	+ 0	+ 0	+ 6,113	+ 6,060	− 638
General government	+ 36,525	+ 50,291	+ 67,000	+ 77,103	+ 88,197
Banks	+ 98,265	+103,489	+131,550	+164,364	+185,170
Other sectors	+ 47,832	+ 48,158	+ 57,126	+ 73,841	+ 80,416
Other financial institutions	+ 9,714	+ 8,858	+ 8,949	+ 16,344	+ 13,713
Nonfinancial corporations	+ 37,551	+ 39,206	+ 47,765	+ 56,381	+ 65,335
Households	+ 567	+ 94	+ 411	+ 1,116	+ 1,369
External liabilities	+182,622	+201,937	+261,790	+321,368	+353,146
OeNB	+ 20,792	+ 23,647	+ 22,181	+ 20,491	+ 25,157
General government	− 34,280	− 47,624	− 64,731	− 73,573	− 84,016
Banks	− 17,078	− 22,021	− 29,420	− 43,351	− 47,594
Other sectors	+ 545	+ 10,471	+ 35,172	+ 56,085	+ 56,830
Other financial institutions	+ 8,747	+ 16,664	+ 39,930	+ 53,950	+ 59,399
Nonfinancial corporations	− 15,324	− 14,269	− 14,929	− 10,870	− 15,180
Households	+ 7,122	+ 8,076	+ 10,171	+ 13,006	+ 12,611
Net investment position	− 30,021	− 35,527	− 36,798	− 40,348	− 49,624
Nonequity assets or liabilities					
OeNB	+ 19,272	+ 21,591	+ 25,789	+ 24,310	+ 22,326
General government	+ 1,068	+ 1,586	+ 1,108	+ 2,285	+ 2,807
Banks	+ 78,713	+ 79,060	+ 97,712	+116,316	+131,176
Other sectors	+ 28,531	+ 33,041	+ 50,753	+ 64,826	+ 74,385
Other financial institutions	+ 12,939	+ 17,699	+ 32,665	+ 40,061	+ 47,894
Nonfinancial corporations	+ 11,567	+ 11,574	+ 14,408	+ 21,036	+ 22,701
Households	+ 4,026	+ 3,768	+ 3,680	+ 3,728	+ 3,790
Nonequity assets	+127,585	+135,278	+175,362	+207,736	+230,695
OeNB[3]	+ 0	+ 0	+ 6,113	+ 6,060	− 638
General government	+ 37,812	+ 50,373	+ 67,000	+ 77,103	+ 88,197
Banks	+ 94,891	+ 99,013	+127,405	+156,797	+177,430
Other sectors	+ 18,909	+ 20,665	+ 23,595	+ 28,307	+ 34,912
Other financial institutions	+ 586	+ 544	+ 357	+ 1,796	+ 4,236
Nonfinancial corporations	+ 17,757	+ 20,055	+ 22,882	+ 26,338	+ 30,512
Households	+ 567	+ 66	+ 355	+ 174	+ 164
Nonequity liabilities	+151,612	+170,051	+224,113	+268,268	+299,901
OeNB	+ 19,272	+ 21,591	+ 19,676	+ 18,249	+ 22,964
General government	− 36,743	− 48,787	− 65,892	− 74,818	− 85,390
Banks	− 16,177	− 19,954	− 29,693	− 40,481	− 46,254
Other sectors	+ 9,622	+ 12,376	+ 27,158	+ 36,518	+ 39,473
Other financial institutions	+ 12,353	+ 17,155	+ 32,308	+ 38,266	+ 43,658
Nonfinancial corporations	− 6,190	− 8,481	− 8,474	− 5,302	− 7,812
Households	+ 3,459	+ 3,702	+ 3,325	+ 3,554	+ 3,627
Net external debt	− 24,027	− 34,774	− 48,751	− 60,532	− 69,207

Source: OeNB.
[1] *Final data.*
[2] *Revised data.*
[3] *Liabilities with a negative sign may result from transactions processed via the ESCB TARGET system, for which special rules apply.*

Table 7

Portfolio Investment in 2001[1]) – Sectoral Breakdown

	Total	Equity securities			Debt securities		
		total	stocks	mutual fund shares	total	bonds and notes	money market instruments
End-of-period stocks in EUR million							
OeNB	4,807	1,133	0	1,133	3,674	3,410	264
General government	775	88	52	37	686	611	75
Banks	38,458	3,155	2,262	893	35,303	34,900	403
Other sectors	91,145	37,500	27,300	10,200	53,645	53,300	345
Other financial institutions	71,152	24,281	17,924	6,357	46,872	46,667	204
Nonfinancial corporations	8,247	5,237	3,527	1,709	3,011	2,948	63
Households	11,745	7,983	5,849	2,133	3,762	3,685	77
Portfolio investment, assets	135,184	41,876	29,614	12,262	93,308	92,221	1,087
OeNB	×	×	×	×	0	0	0
General government	84,027	×	×	×	84,027	82,528	1,499
Banks	80,513	3,266	3,266	0	77,247	70,621	6,626
Other sectors	30,175	12,236	3,809	8,427	17,939	17,908	31
Other financial institutions	12,118	8,427	0	8,427	3,691	3,691	0
Nonfinancial corporations	18,057	3,809	3,809	0	14,248	14,217	31
Households	×	×	×	×	×	×	×
Portfolio investment, liabilities	194,715	15,502	7,075	8,427	179,213	171,057	8,156

Source: OeNB.
[1]) *Revised data.*

Table 8

Bridging Table to the Results of the 2000 Direct Investment Survey

	2000[1])
	End-of-period stocks in EUR million
Assets	
Outward direct investment (IIP)	28,223
Less real estate abroad	1,548
corresponds to direct investment claims on nonresidents/total[2])	26,675
thereof equity	*23,871*
other capital	*2,804*
Liabilities	
Inward direct investment (IIP)	33,616
Less real estate in Austria	912
corresponds to direct investment liabilities to nonresidents/total[3])	32,704
thereof equity	*31,158*
other capital	*1,546*

Source: OeNB.
[1]) *Final data.*
[2]) *See supplement to Focus on Austria 2/2002 Austrian Outward and Inward Direct Investment, table 1.1.*
[3]) *See supplement to Focus on Austria 2/2002 Austrian Outward and Inward Direct Investment, table 1.2.*

Wage Formation in the Euro Area

EMU and European Wage Coordination

Alain Borghijs[1]

1 Introduction

Economic activity and policy in Europe have undergone profound changes in the 1990s. The importance of multinational companies has increased dramatically. On the policy front, monetary policy has been coordinated for the entire euro area since the introduction of the single European currency. At the same time, fiscal policy coordination beyond the Stability and Growth Pact is being heavily debated. These examples illustrate the growing European dimension of economic life. At the same time, labor markets and labor market policy seem to be sheltered from this tendency towards Europeanization. Labor mobility remains stunningly low, labor market policy remains the responsibility of national governments and the European coordination of wage negotiations appears to be extremely difficult to organize. However, economic integration in Europe, culminating in the introduction of the single currency constitutes such a drastic change in the economic environment that labor markets cannot remain unaffected. In this paper I would like to single out one potential change in the labor market: the Europeanization of wage bargaining. I will argue that some aspects associated with Economic and Monetary Union (EMU) increase the incentives for European wage coordination while at the same time economic integration in Europe reduces the costs of coordination (see section 2). In section 3, I focus on the potential consequences of European wage coordination for labor market performance. Section 4 contains some concluding remarks.

2 The Role of EMU and Economic Integration for Wage Bargaining in Europe

In this section, I will argue that EMU generates a number of effects that increase the incentives for European wage coordination while at the same time reducing the obstacles to coordination. The main channels through which these effects take place are integration processes in product and labor markets.

2.1 EMU Increases the Incentives for European Wage Coordination

EMU reduces transaction costs and eliminates currency risks that previously arose from international trade. It enlarges the relevant market for firms and fosters international trade and product market integration. As a consequence, firms will be exposed to higher competitive pressures, potentially resulting in lower product prices and lower profit margins. This process spills over onto the labor market. The smaller the profit that is generated in the product market, the smaller the wage mark-up unions will be able to negotiate (Stewart, 1990; Nickell, 1999). It is therefore generally thought that product market integration leads to lower wages.[2] This evolution is, however, not necessarily detrimental for trade unions. To the extent that higher competition in the product market results in lower prices, output and employment increase. Hence lower wages are traded off against higher employment levels. In fact, a number of the above-

2 See, among others, Huizinga (1993), Sørensen (1993), Driffill and van der Ploeg (1993, 1995), Naylor (1998, 1999) and Burda (2001).

mentioned authors find that product market integration actually results in higher union rent.[1]) However, higher competition in the product markets is not the only factor that puts a downward pressure on wages. Product market integration also improves firms' bargaining position in wage negotiations relative to trade unions' bargaining position. Whereas trade barriers make firms' threat to relocate to another country and subsequently export their goods rather unlikely in cases where unions demand excessive wages, this threat becomes more credible the more integrated the product market is. Hence firms that operate in markets for tradable goods are able to provoke wage competition among national trade unions. It is this factor that incites unions to coordinate wage demands on an international scale. If unions succeed in eliminating wage competition through mutual wage agreements, they virtually operate as the monopoly supplier of labor. This makes firms' relocation threats less credible as it will become difficult to locate themselves outside the reach of the monopoly union. It can therefore be concluded that increasing economic integration in the product market, sparked by EMU, increases the incentives for unions to coordinate wage demands at the European level.

Current Wage Coordination Initiatives

The increased incentive for wage coordination has materialized in a (limited) number of coordination agreements in Europe. Collective bargaining at a European level is probably most advanced in the European metal industry. The primary goal of the European Metalworkers' Federation (EMF) is to prevent downward competition in wages and working conditions. At its current stage, the agenda is dominated by its attempts to implement a common bargaining rule for its member unions. Given that national bargaining practices are often the result of local conditions, strategies of national unions differ widely. Despite these national differences, the members of the EMF adopted a resolution in 1998, stating that "the commitment to safeguard purchasing power and to reach a balanced participation in productivity gains is the new European coordination rule for coordinated collective bargaining in the metal sector all over Europe." This clearly reflects the belief that European wage coordination will improve workers' bargaining position (Schulten, 2001).

In another initiative, national trade unions of Belgium, Germany, Luxembourg and the Netherlands signed the Doorn agreement in 1998. While endorsing the goal of the EMF coordination agreement, the scope of the Doorn group is broader. Besides the concern over fair wage demands, the Doorn unions also aim at the promotion of employment growth. This was inspired by the feeling that prolonged wage moderation had resulted in insufficient job growth. In organizing a workers' representation at the centralized level and on a transnational scale, trade unions also hope to secure the social dialogue that has characterized wage bargaining in the individual member states of the Doorn group. In practice, trade union representatives of the participating countries meet annually and discuss the coordination of national wage-setting practices.

At the firm level, European works councils bring together workers of multinational companies operating in Europe. Although their primary goal is to improve workers' information and consultation rights on issues that surpass national interests, it cannot be prevented that workers employed at the same company compare payslips, which has been facilitated considerably since the introduction of the euro. It has been indicated that this facilitated comparison has increased the pressure to harmonize wage demands over different Member States.

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1   *Standard union theory assumes that trade unions strive for high wage mark-ups over the reservation wage as well as for maximum employment. Hence, union rent is a positive function of both.*

2.2 Economic Integration Reduces the Obstacles
### to European Wage Coordination

In spite of some wage coordination initiatives (see box), wage bargaining has remained predominantly a national matter. It has been argued that the limited success of wage coordination is attributable to the fact that labor market institutions – and particularly wage bargaining institutions – are characterized by a high degree of inertia (Wallerstein et al., 1997). In this view, wage coordination may only come about in the medium to long run. Although I do not disagree with this conclusion, I will follow a different track with respect to the causes, arguing that the number of wage coordination initiatives has so far remained limited because coordination not only brings about benefits (in the form of higher union rent) but also costs, and because it is potentially inhibited by asymmetries between countries. To demonstrate these points, I will sketch the conclusions derived from two theoretical models the details of which can be found in Borghijs and Du Caju (1999) and Borghijs (2001). Both papers study the optimal strategy of trade unions (national wage-setting versus international wage coordination) when trade barriers are removed between two countries characterized by imperfect competition in the product market (Cournot output competition) and in the labor market (monopoly union wage-setting). Borghijs (2001) focuses on asymmetries in productivity and reservation wages between countries while Borghijs and Du Caju (1999) assume a symmetric context in which wage coordination is costly. As these differences and costs can be expected to decrease in the future, notably through economic integration and EMU, the inhibitions to European wage coordination are likely to be lower.

2.2.1 Economic Integration Reduces Asymmetries between Countries

A first reason for the scarce evidence of European wage coordination may be the existence of structural asymmetries between countries. This argument can be understood as follows: It can be demonstrated that a coalition of trade unions is always better off when all member unions coordinate wage demands than when each national union sets the wage separately for each individual country. By bargaining jointly, union monopoly power increases and unions are able to appropriate a larger share of the rent generated in the firm. In a symmetric economy with identical labor and product markets, every national trade union in the coalition receives an equal share of this rent. When unions operate in countries that differ in economic structure, however, one union may benefit more from the coordination agreement than the other. It may even be the case that labor and/or product markets are so asymmetric between countries that one of the trade unions is worse off coordinating than competing. In firm cartels, money transfers from firms that are better off to firms that are worse off can overcome this problem. Unlike in the product market, similar redistribution mechanisms are not as readily available among trade unions in the EU. In practice, this would require a considerable degree of international workers' solidarity.

It turns out that there exist conditions under which one of the trade unions is worse off coordinating than competing. This is illustrated in chart 1, which shows the results of a simulation exercise with the asymmetric model described above.

Chart 1

Coordination Incentives for Varying Levels of ww$_i$ and α_i

α_i/α_j in %

ww$_i$/ww$_j$ in %
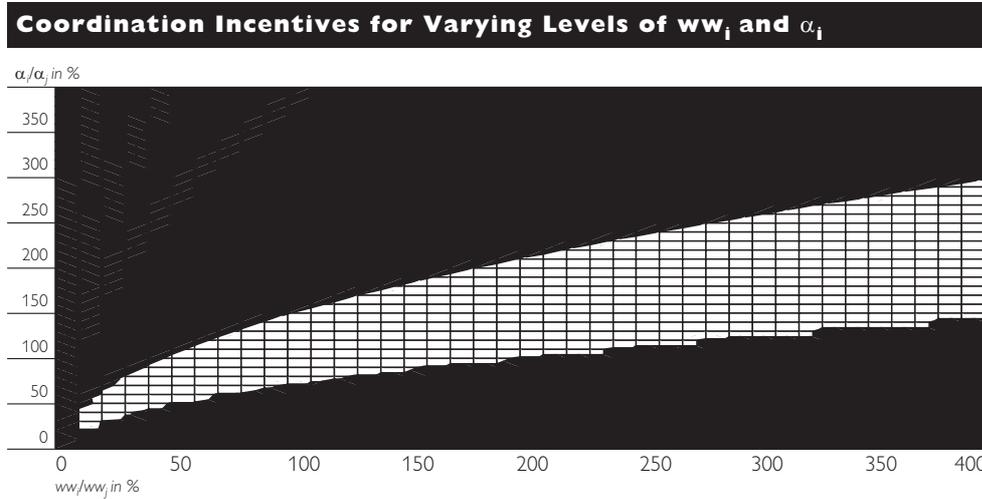
The chart shows the scope for coordination for different combinations of the reservation wage (ww_i) and the productivity level (α_i) in one country (the "home" country) as a percentage of these variables (ww_j and α_j) in the other country (the "foreign" country). By varying these parameters for one country while keeping them constant for the other country, the impact of asymmetries between countries on the incentive for wage coordination can be studied. The white area shows the parameter combinations for which both unions are willing to coordinate wage demands as both unions obtain higher union rent when they coordinate than when they compete. The black areas represent parameter combinations for which wage coordination cannot be sustained as one of the unions is better off bargaining over wages on its own while competing with the other union.

The simulation exercise suggests that the coordination incentive is related to the relative competitiveness of the two countries/unions. Large asymmetries between the two countries tend to result in a negative coordination incentive for one of the unions. More particularly, the upper black area results in a bad competitive position for the foreign country (owing to a high reservation wage and low productivity relative to the home country) and a negative coordination incentive for the foreign union. The lower black area results in a negative coordination incentive for the home union. This chart reflects the idea that a certain amount of symmetry in competitiveness is required between the two countries in order to reach a wage coordination agreement.

The intuition behind the result that large asymmetries between countries hamper wage coordination can be understood as follows: When trade unions coordinate, they internalize the spillover effects of each others' wage demands, which generates a number of interaction effects between the wages set for the different countries in the coalition. If for example, one of the member countries of the coalition is much weaker than the other in terms of competitiveness, large wage increases would significantly reduce output (and hence employment) in the weaker Member state. In reaction to this negative externality, the more competitive country moderates its wage increase in order to prevent a "race to the top" in wages. In general, the wage increase for the more competitive

country will be more moderate the less competitive the other country is. While this behavior is beneficial for the union coalition as a whole, it also distorts the balance between the two countries. By moderating wage demands in the more competitive country, this becomes the more attractive alternative for firms to locate production facilities. As a consequence, the market share in total output (and hence employment) of the more competitive country is larger when trade unions coordinate than when they compete in the labor market. This results in less union rent for the less competitive country in cases when they coordinate than in cases when they compete in the labor market.

The analysis suggests that large asymmetries between Member States' product and labor markets in terms of competitiveness may be the cause of trade unions' hesitance to coordinate wage-setting across countries. Convergence of the economic environment may therefore reduce the impediments to European wage coordination. In this respect, European economic integration and the introduction of the single currency may certainly contribute to the convergence of EMU Member states' economies. The Maastricht convergence criteria are by far the best-known examples. The requirement to meet the debt, deficit, inflation and interest rate targets as criteria for joining the euro have brought about significant nominal convergence among European countries. Beyond that – and perhaps even more importantly – (the road toward) EMU has also resulted in the real convergence of the underlying economic fundamentals among national economies. In the labor market, national unemployment rates as well as real wage growth have converged over the last decade. Focusing on the variables used in the analysis above, chart 2 also suggests a convergence among EMU Member states over time. The chart shows the evolution of the standard deviation of the replacement rate and of labor productivity as indicators for the dispersion in reservation wages and productivity.

Chart 2

Standard Deviation in Replacement Rates

and Labor Productivity Among EMU Countries

Source: OECD Database on Benefit Entitlements and Gross Replacement Rates for replacement rates and European Economy (1999) for labor productivity.

This evidence suggests that impediments to European wage coordination are gradually declining over time.

2.2.2 Labor Market Integration Reduces the Costs of European Wage Coordination

Even if competitiveness would converge sufficiently among EMU Member states such that all unions were in principle better off coordinating than competing, wage coordination may be difficult to achieve. In reality, wage coordination does not only bring about benefits, but also costs.[1]) These coordination costs may take various forms and stem from various sources, such as legal and institutional differences in national labor markets, differences in the timing and the level at which wages are bargained, information costs and possibly language barriers (Martin, 1996; Burda, 2001). These costs make it difficult to define the optimal strategies for all workers and to compare wage levels and labor conditions across jobs in different countries. Under this assumption, trade unions are only willing to coordinate wage demands across national borders if the benefits from coordination outweigh the costs. It can be demonstrated formally that there exists a strictly positive threshold value for these costs. If the actual coordination costs are larger than this threshold value, trade unions are not willing to coordinate, whereas if the costs are smaller than the threshold value, the benefits outweigh the costs and trade unions are interested in coordinating wage demands.

While coordination costs are currently too high and outweigh the benefits of coordination, the impediments to international wage coordination may disappear in the future. Several factors may contribute to such a development. First, the Europeanization of labor relations regarding more qualitative issues than wage bargaining (e.g. working conditions and labor standards) offer a framework on which the Europeanization of wage negotiations may engraft in the future. In this respect, the European Trade Union Confederation (ETUC) may prove to be a valuable instrument. The European Works Councils plays a similar facilitating role at the firm level (see box). Second, the annual Employment Guidelines initiated at the Luxembourg European Council indicate the awareness of European policy makers that solving labor market problems requires concerted efforts of national policy makers. Given the tradition of tripartite agreements among social partners (government, unions and employer organizations) in some Member States, a similar supranational structure may arise at the European level in the future. This would also considerably facilitate the coordination of wage demands. Third, the removal of the institutional barriers to the free movement of labor within the EU could stimulate labor mobility. This may be an important engine for the appearance of a common European labor market. Finally, the introduction of the single currency has considerably facilitated the comparison of wages across countries. All these factors contribute to a decrease in the costs of European wage coordination.

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1   *The model underlying the analysis in this section differs somewhat from the model underlying section 2.2.1. Whereas the previous model assumes that wage coordination costs are zero while allowing for asymmetries between countries, the model in this section analyses the costly coordination between trade unions in a symmetric context.*

3 Wage Coordination and Labor Market Performance in Europe

The analysis in the previous section suggests that European wage coordination may become more probable in the future. The question that remains open is whether this is a positive evolution or whether this may not be so desirable. This question is evaluated in the light of two challenges I believe European labor markets are, and will increasingly be, exposed to: persistently high unemployment rates and an increased need to accommodate asymmetric shocks through the labor market.

3.1 Wage Coordination, Wage Demands and Equilibrium Unemployment

The beginning of EMU unfortunately coincides with a rather poor state of the labor market. Although the situation has improved in some Member States, average equilibrium unemployment[1]) in EMU is still considerably higher than in a number of industrialized countries not belonging to EMU (see table 1).

Table 1

Equilibrium Unemployment in the OECD Countries[1])

	EMU countries						Non-EMU countries				
	1980	1985	1990	1995	1999		1980	1985	1990	1995	1999
	in %						in %				
Increasing NAIRU						**Increasing NAIRU**					
Finland	4.3	3.9	5.6	10.6	9.0	Japan	1.9	2.7	2.2	2.9	4.0
Germany	3.3	4.4	5.3	6.7	6.9	Sweden	2.4	2.1	3.8	5.8	5.8
Italy	6.8	7.8	9.1	10	10.4						
Stable NAIRU						**Stable NAIRU**					
Austria	1.9	3.2	4.6	5.0	4.9	Australia	5.1	6.0	6.5	7.1	6.8
Belgium	5.5	6.8	8.4	8.0	8.2	New Zealand	1.6	5.1	7.0	7.5	6.1
France	5.8	6.5	9.3	10.3	9.5	Norway	2.2	2.6	4.6	4.9	3.7
Greece	4.6	6.5	8.4	8.8	9.5						
Decreasing NAIRU						**Decreasing NAIRU**					
Ireland	12.8	13.2	14.1	10.8	7.1	Canada	8.9	10.1	9.0	8.8	7.7
Netherlands	4.7	7.5	7.5	6.1	4.7	Denmark	5.8	5.9	6.9	7.1	6.3
Portugal	6.1	5.4	4.8	4.2	3.9	Switzerland	2.3	2.9	3.0	3.3	2.4
Spain	7.8	14.4	17.4	16.5	15.1	United Kingdom	4.4	8.1	8.6	6.9	7.0
						U.S.A.	6.1	5.6	5.4	5.3	5.2
Average NAIRU						**Average NAIRU**					
Weighted average	5.5	7.1	8.8	9.2	8.9	Weighted average	4.8	5.3	5.2	5.1	5.3

Source: OECD (2000).

[1]) *As a percentage of the labor force. Equilibrium unemployment data are based on estimates of the NAIRU made for the OECD Economic Outlook (2000). An increase or decrease over the period 1990–1999 is considered significant (in absolute terms) if it exceeds one standard deviation. The latter was calculated for each country over the period from 1980 to 1999.*

With respect to the causes of high equilibrium unemployment in EMU, the important role of labor market institutions giving incentives for wage hikes has been stressed repeatedly (Bean, 1994; Blanchard and Wolfers, 2000). One of these labor market institutions is the wage bargaining process and, more specifically, the ability of trade unions to use their monopoly power to raise wages above the market-clearing level.[2]) It is generally found that higher union

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1 The equilibrium unemployment rate or NAIRU (non-accelerating inflation rate of unemployment) can be defined as the rate of unemployment at which inflation is stable and which is not amenable to macroeconomic policy measures.

2 Other institutions that are often cited are employment protection legislation (hiring and firing costs), the level and duration of unemployment benefits and the share of active labor market policy (education, mediation).

bargaining power results in higher wage demands, which ultimately results in higher unemployment.

What may be the impact of European wage coordination on union bargaining power, wage demands, and hence on unemployment? Coordination unmistakably increases the bargaining power of trade unions. The first reason is that trade unions take into account the international spillover effects of their behavior, in particular the impact of their own wage demands on the welfare of trade unions in other countries. In a sense, trade unions thus reduce international competition by forming a coalition. Second, wage coordination also worsens the relative bargaining power of the firms as it reduces the number of countries a firm can migrate to in case wage negotiations break down. Third, in the case of international wage coordination trade unions are able to claim a larger share of the rents. Intuitively, trade unions not only bargain about the country-specific rents but also about European rents, e.g. rents related to brand names. When coordinating internationally, trade unions are able to bargain over these European rents as well.

What wage evolution could result from wage coordination? Chart 3 sketches a possible scenario, based on the assumptions made by Borghijs and Du Caju (1999). It draws the wage level (w) as a function of the union coordination cost (t).

Chart 3

Bargaining Coordination and Wage Outcome

in the Presence of Coordination Costs
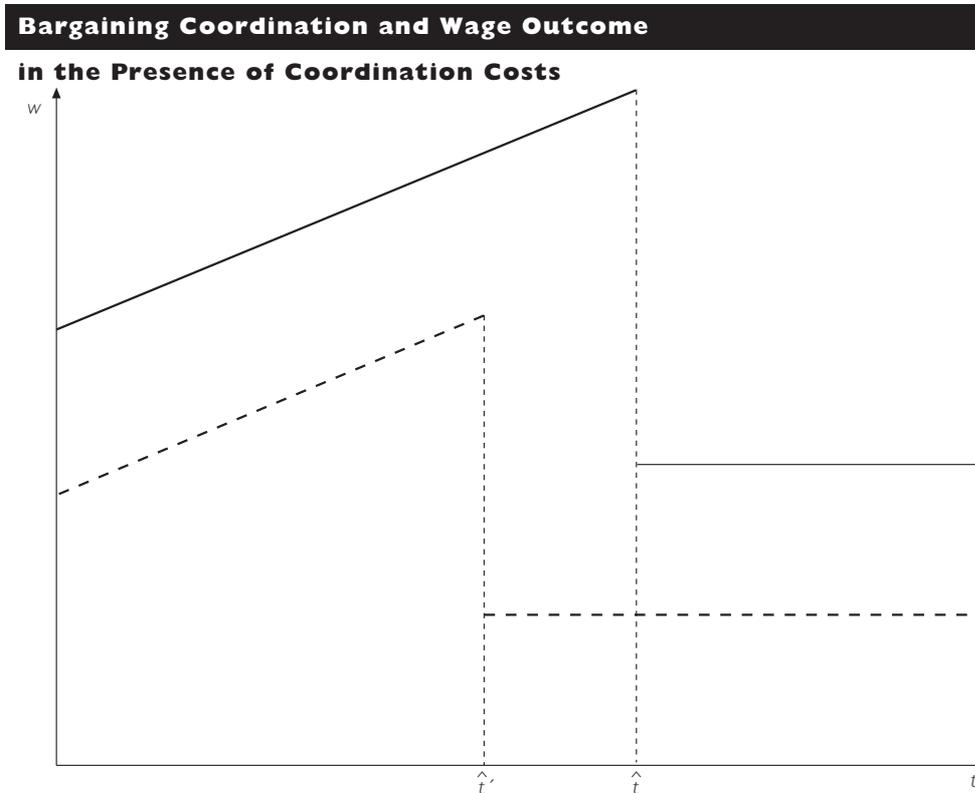
The threshold value of t is denoted by $\hat{t}$. For coordination cost values higher than $\hat{t}$, the costs of coordination outweigh the benefits such that trade unions are not willing to coordinate wage demands. As a consequence, national trade

unions compete in wage-setting and attempt to attract production and employ-ment by undercutting the wages set by unions in other countries. This results in a low wage level. Integration in the labor market reduces the value of t, possibly below the threshold value $\hat{t}$. The consequence for the wage outcome is clear: By coordinating wage demands, trade unions exploit their monopoly power and are able to set a higher wage than when they compete. This is reflected in the upward wage jump in chart 3. Further labor market integration results in a gradual wage decline. This is due to the fact that trade unions shift part of the coordination cost onto wage demands. Declining costs therefore reduce wage demands. Note, however, that the wage level always remains higher than the competitive wage level, even when the coordination costs approach zero. This follows from the higher bargaining power of the unions in the coordinated case. The results of the asymmetric model (Borghijs, 2001) with respect to the impact of wage coordination on wage demands are similar to the above results, i.e. wage coordination increases unions' bargaining power and puts an upward pressure on wages.

Summing up, the evidence suggests that European wage coordination increases unions' bargaining power, which may result in higher wages and potentially higher unemployment. Two qualifications must, however, be made. The first is related to the impact of EMU on product markets. As argued above, EMU intensifies product market integration. Assuming that firms do not exploit the benefits of coordination in an integrated product market, this process also fosters product market competition.[1] According to Burda (2001) this causes an increase in the elasticity of product demand with which the individual firm is confronted. Intuitively, the increased availability of rival products makes con-sumers more sensitive to price changes of an individual producer. This puts a downward pressure on prices, profit margins and wages. The wage effect is illustrated by the dashed line in chart 3, which depicts the wage evolution as a function of the coordination cost t when the elasticity of product demand is higher than in the case represented by the solid line. The wage level, irrespec-tive of the trade union regime, is lower. Therefore, if we assume that EMU results in both more product market competition and labor market integration, this implies (in terms of chart 3) a shift from the right to the left (labor market integration) accompanied by a switch from the solid to the dashed line (more product market competition). The combination of both effects has an ambig-uous result on the wage outcome. The eventual wage under wage coordination may either be above or below the original wage under wage competition.[2]

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1   *The difference between product market integration and product market competition is not just a matter of semantics. Indeed, it is not entirely sure EMU and product market integration will result in more product market competition. Firms try to counterbalance the increased competitive pressures by mergers and consol-idations in order to maintain or even increase their market power. It is therefore not unthinkable that product markets may become more concentrated than in the past.*

2   *Also note that the threshold value is lower the higher the degree of product market competition. This means that trade unions are less rapidly inclined to coordinate wage demands the more elastic product demand is. This follows from the fact that coordination costs — assuming they are identical across industries — are more rapidly compensated for in less competitive industries than in more competitive industries as a result of higher wage premia in the former.*

A second qualification that may mitigate our earlier finding that EMU leads to higher wage demands and higher unemployment relates to unions' willingness to internalize the negative external effects of high wage demands on the rest of the economy. The so-called "corporatist school" does not assume that higher union bargaining power automatically leads to higher wage demands. In this view, larger and more encompassing wage-setters are more aware of the negative externalities associated with high wages.[1] As European wage coordination increases the size of trade unions and hence the impact of their actions, they may be encouraged to internalize these externalities more than national trade unions. This may moderate wage demands and limit the negative effects on unemployment.

3.2 Wage Coordination, Wage Flexibility and Asymmetric Shocks

European wage coordination may also influence the flexibility with which wages respond to economic shocks. This issue has gained importance since the introduction of the euro as EMU Member states are now deprived from monetary and, to a lesser extent, fiscal policy to absorb asymmetric developments between countries. The ECB is able to respond to shocks in the entire euro area but cannot take account of these asymmetric developments. Since stabilization through the EU budget is also virtually absent, this implies that adjustment to asymmetric shocks has to take place through the labor market. This could occur either through quantity or through price adjustments, i.e. through changes in employment or in the wage rate. In order to limit the undesirable effects on employment and to guarantee an appropriate wage response, wage bargaining should take place at the level at which shocks occur (Pissarides, 1997; Calmfors, 2001). In this respect, it has been argued that European wage coordination reduces wage flexibility as it is not suitable to absorb country-specific shocks in the EU (Siebert, 1998). This particularly holds for forms of wage coordination in which uniform wage levels are negotiated or that set upper and lower thresholds for national wage claims.

However, other forms of coordination that allow for more flexibility could also emerge. For instance, there may be some degree of coordination whereby individual trade unions have sufficient flexibility in determining their own wage claims based on national developments in productivity and prices. The model by Borghijs (2001) does indeed support the idea that European wage coordination is not necessarily less flexible in absorbing asymmetric developments between countries. This is illustrated in table 2, which summarizes the effects a negative productivity shock in the foreign country has on wages (w_i and w_j) in the home country and foreign country, respectively. While productivity in the home country remains constant, the productivity decrease in the foreign country can be considered as a country-specific asymmetric shock. The wage effect of the productivity shock is evaluated by calculating the elasticity with which the

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1   *A number of externalities come to mind. Higher wages increase production costs and may result in higher consumer prices, thus pushing up inflation. Higher wages also drive up labor costs, raising the number of unemployed whose unemployment benefits have to be financed by a smaller number of workers, leading to an increase in the (labor) tax burden (Calmfors, 1993).*

wages respond to the productivity change. A positive value means that the wage concerned decreases as the negative productivity shock occurs.[1])

Table 2

Wage Response to an Asymmetric Shock

	Wage competition	Wage coordination
$\varepsilon_{a_j}^{w_i}$	−0.0032	0.0791
$\varepsilon_{a_j}^{w_j}$	−0.1784	0.1818

The crucial difference between wage competition and wage coordination lies in the opposite signs of the elasticities for the wage in the home country (w_i). When wages are set separately, the decrease in α_j raises w_i. This wage reaction reflects the response of the home union to the decreased competitiveness of the foreign union. Lower productivity in the foreign country strengthens the competitiveness of the home country, resulting in higher wage demands by the home union. However, when unions coordinate wage demands, the wage in the home country decreases in response to the reduction in α_j. In this case, the productivity decline in the foreign country is perceived as an average productivity decline for the coalition of the two unions, resulting in lower wage demands for the home country.

As expected, the wage in the foreign country decreases in both cases in response to the productivity shock. This is reflected in the positive sign of both elasticities. Declining productivity and competitiveness in the foreign country dampen wage demands. Contrary to the idea that wage coordination reduces wage flexibility, however, the wage in the foreign country reacts more flexibly to the productivity shock under wage coordination than under wage competition. Under wage competition the decline of the foreign wage is dampened by the increase in the home wage. Higher wages in the home country only require a moderate wage decline in the foreign country to restore the competitive balance. Under wage coordination the decline in the foreign wage is amplified by the decline in the home wage.

What lessons can be drawn with respect to the suitability of European wage bargaining for correcting asymmetric shocks? The impact of coordination on wage flexibility crucially depends on the participating members' reaction to the shock. If unions react as sketched in the model, i.e. if the wage decline in the country affected by the negative shock is accompanied by appropriate wage declines in the other countries, the unemployment effects may be limited. If, however, the other members keep their wages constant or even increase their wages (as it is the case in the model for the wage competition regime) in response to the decreased competitiveness in the country affected by the shock, the outcome will not be positive. The affected country has less incentive to moderate wages in order to restore its competitiveness and employment will most likely be negatively affected.

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1   The reported figures result from a symmetric setting in which the foreign country undergoes a 10% productivity decrease. The qualitative results also hold under more general conditions.

4 Conclusion

This paper has focused on the potential for a European dimension in wage negotiations. I have argued that trade unions perceive an increased pressure to coordinate wage demands across countries in order to compensate for the loss of bargaining power caused by product market integration and EMU. These coordination efforts are currently hampered by differences in national economic structures and by high coordination costs due to the lack of a unified bargaining framework. This may change in the future. The preparations for the single currency have not only brought about nominal, but also real convergence – a process that may continue for a while as the full benefits of EMU begin to materialize. At the same time, the focus of European policy makers is gradually shifting to the coordination of labor market policy and the integration of European labor markets. All these evolutions contribute to the facilitation of Europe-wide coordination of wage bargaining.

The Europeanization of wage bargaining was then evaluated in the light of two challenges to European labor markets: the need to reduce unemployment and the need for more wage flexibility as a substitute for monetary and fiscal policy to absorb asymmetric shocks. With respect to the first need, the analysis indicates that wage coordination may potentially lead to higher wage demands, which would not contribute to the desired unemployment reduction. Whether wage flexibility will decrease when wage bargaining is coordinated across countries – as it is sometimes argued – remains to be seen. The analysis indicates that wage coordination is not necessarily less flexible than wage competition, provided that trade unions do not unilaterally exploit problematic situations in other Member States.

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Employment and Wage Adjustment in the Euro Area's Labor Market – a Bird's Eye View

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1 Introduction

To the extent that relatively low employment rates and persistently high unemployment rates indicate a malfunctioning of labor markets, EMU entered its third stage in a situation in which labor market mechanisms still need to be improved considerably in order to expand employment opportunities and to reduce structural unemployment. This paper analyzes a few key labor market mechanisms in the euro area with some focus on the impact EMU might have on labor market mechanisms and, conversely, the risks emanating from labor markets that are still generally hampered by numerous structural problems.

EMU can be expected to exert a profound impact on market participants. In particular, it will affect the price setting and wage bargaining behavior of economic agents in a macroeconomic environment characterized by a single, stability-oriented monetary policy and sound national fiscal policies in accordance with the provisions of the Treaty and the Stability and Growth Pact designed to avoid any conflict with monetary policy (Buti and Sapir, 1998).

The introduction of a single currency is bound to increase the degree of competition in product and service markets by enhancing price transparency across EMU Member States. More competitive product and service markets will help achieve better labor market outcomes, in particular when accompanied by appropriate labor market reforms.[3] Fiercer competition is likely to be associated with a higher level of job turnover; thus, the full gains of better functioning product and service markets will only materialize if sufficiently flexible labor markets allow for a relatively smooth and swift reallocation of labor. The improved functioning of product and service markets implies that the potential for rent sharing behavior between workers and firms will be strongly reduced; an effect equivalent – in the context of the Calmfors-Drifill hypothesis – to a forced decentralization of wage bargaining, thus flattening out the hump-shaped relation between the degree of wage-bargaining centralization/coordination and labor market performance.

A similar type of argument, though from a slightly different perspective, has recently been put forward by Blanchard and Giavazzi (2001) in the context of interactions between product and labor market reform. Broadly speaking, it is based on the notion that if product market deregulation decreases total rents, the incentives for workers to appropriate a proportion of these rents may be reduced, which results in a weakening of trade unions, a reduction of insider power and, consequently, labor market deregulation.

EMU will also provide improved framework conditions for employment-compatible wage bargaining behavior, as the link between wage and employment trends will become more evident and stringent. The responsibility for wage setting procedures and outcomes compatible with the achievement and maintenance of high employment continues to fall primarily in the domain of

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the social partners. As indicated above, inappropriate wage developments – or, more generally speaking, inadequate labor market structures – in specific countries or regions, particularly when they are big enough to require an offsetting monetary policy response, may have harmful consequences for other members of EMU as well, thus re-enforcing the case for strengthened economic policy coordination.

EMU has been predicted to have an impact on the strategic interaction between systems of collective wage bargaining and central bank monetary rules.[1]) Phrased in economic jargon, the reaction function of the ECB in the new monetary regime and their perceived threat point is likely to affect wage bargaining behavior in different ways across countries, depending on institutional settings. With the exchange rate option no longer available, trade unions in some countries with a history of above-average inflation will have stronger incentives to internalize the effects of their wage demands on the whole economy. However, it has also been argued that targeting European inflation by the ECB may, ceteris paribus, be associated with more aggressive wage bargaining behavior by trade unions in the former DM-block and, in particular, in Germany itself, since a direct fully rewarding monetary response to wage restraint can no longer be expected.

In case of temporary adverse demand developments, the burden on wage adjustment can to some extent be mitigated by fiscal policy temporarily allowing the budget deficit to run high due to the effect of automatic fiscal stabilizers. Fiscal stabilization policies are apparently less adequate in case of a more permanent negative supply shock calling for an adjustment in real wages. However, resistance to real wage adjustment might be reduced, when fiscal policies assist to spread the necessary decline in real income more evenly across the population, thus not putting the adjustment burden entirely on wage earners.

In general, however, smooth shock-absorption will require a flexible wage formation process. Without this flexibility, the necessary adjustment will be through employment levels. The available country-specific empirical evidence suggests that while long-run real wage flexibility in most EU countries more or less matches U.S. levels, the speed of adjustment has been significantly lower in continental Europe (OECD, 1994). Thus, short-run costs in terms of output, job losses and unemployment are increased. Moreover, these negative sequels run the risk of persisting through time, since unemployment may breed unemployment, mainly by diminishing the effectiveness of the (long-term) unemployed as job seekers in the market. Thus, the case for active labor market policies to upgrade skills, to facilitate the reintegration of the unemployed and to increase labor supply is considerably strengthened.

Overall, the 1990s witnessed relatively widespread product and labor market reforms in most euro area countries, spurring competition in goods and services markets and cracking down on insider-outsider divisions in the labor markets. While it is certainly difficult to establish precisely the contri-

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1   The nature of these interactions has been recently explored in a relatively new strand of the literature arriving at fairly divergent conclusions; see for example Soskice and Iversen (1998), Cukierman and Lippi (1999), Velasco and Guzzo (1999), Kilponen (1999) and Franzese (2000).

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bution of the various reform efforts, there can be little doubt that they have left their traces in a reduction of the structural rate of unemployment. However, it must also be acknowledged that reform progress has been fairly uneven across countries with, in particular, all the major economies of the euro area still hampered by relatively high structural unemployment. Thus, as regards the working of the euro area's labor market, there is clearly no reason for complacency.

Given the increasing importance of smoothly functioning markets in EMU, this paper attempts to establish some stylized facts with respect to labor demand behavior, nominal and real wage developments, and the cyclicality of unemployment in the euro area. In section 2, a simple equation for aggregate labor demand is specified and estimated on a macroeconomic data set for the euro area. Section 3 provides a short review of a few stylized facts regarding nominal wage developments and constructs a wage gap indicator to capture the movement of real wages in labor efficiency units. Finally, section 4 looks at the responsiveness of employment and the labor force to cyclical conditions in the euro area and provides an empirical assessment of Okun's law for the euro area. A special emphasis is put on the possible detection of shifts in structural parameters in the recent past, which would be indicative of a change in behavioral relations. Section 5 concludes.

2 A Simple Labor Demand Equation for the Euro Area

The purpose of this section is to characterize aggregate labor demand behavior in the euro area by estimating three key parameters of a fairly conventional structural labor demand equation. The parameters of interest are the speed of employment adjustment, the real wage elasticity of labor demand, and an estimate for trend growth in labor productivity in the euro area. The analytical tool used is an inverted production function approach, with optimal factor demand equations being derived from cost minimization subject to a production function constraint.

For a standard CES-type production function optimal labor demand N^* under cost minimization is given by

$$N^* = A. \, Y.(W/P)^{-\lambda}.e^{-g\,T}, \tag{1}$$

where N^* denotes optimal employment, A is a scaling parameter, Y is output in volume terms, W/P is gross wages per worker deflated by output prices, λ is the constant-output real wage elasticity of labor demand, and g represents exogenous technical progress. Assuming that employment does not adjust instantaneously to its optimal level, we may think of a partial adjustment process in the form

$$(N/N_{-1}) = (N^*/N_{-1})^s \; with \; 0 < s < 1, \tag{2}$$

where N is actual employment and the partial adjustment parameter s denotes the speed of adjustment. Substituting (1) into (2) and taking logarithms yields

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$$log\ (N/N_{-1}) = s\ log\ A + s\ log\ (Y/N_{-1}) - s.\lambda\ log\ (W/P) - s.\ g\ T \quad (3)$$

which can be estimated straightforward by OLS. We estimate the equation also by TSLS to control for the endogeneity of the real wage, using the lagged real wage as instrument. In order to account for a structural break in trend productivity growth, we allow for different time trends running up to 1974, from 1975 to 1998 and from 1999 onwards. The data set used throughout the following chapters is taken from AMECO (Annual MacroECOnomic database) compiled by the European Commission's Directorate General for Economic and Financial Affairs (DG ECFIN).

The estimation results for a euro area[1]) aggregate labor demand equation are presented in tables 1 and 2. Table 1 shows the results of the OLS estimation of equation (3) over the period 1970 to 2000. The speed of employment adjustment is estimated at 0.55, thus on average slightly more than one half of the employment adjustment towards its optimal value took place within one year. The point estimate for the real wage elasticity of labor demand (for a given output) suggests that for a 1% increase in real product wages labor demand will drop, ceteris paribus, by 0.57%. The estimate for trend technical progress is 1.1%. It may be interesting to note that observed labor productivity increased on average by 1.9% over this time horizon, implying that part of labor productivity growth has been induced by relative factor price movements.

Table 1

Labor Demand Equation Euro Area (OLS) 1971–2000[1])

Variable	Coefficient	t-Statistic
$log\ (Y_{t-1}/N_{t-1})$	0.5514	(2.42)
$log\ (W/P)_t$	−0.3162	(−3.25)
T74	−0.0066	(−1.68)
T7598	−0.0061	(−1.86)
T9900	−0.0054	(−1.73)
C	4.7012	(3.04)

$R^2 = 0.46$.
DW = 1.43.
Number of observations = 30.
Estimates of structural parameters:
Speed of employment adjustment = 0.55, real wage elasticity of labor demand = −0.57,
trend growth of technical progress = 1.1%.

[1]) Dependent variable log (N_t/N_{t-1}) is employment growth. Y denotes output, W/P real product wage, T74 a trend from 1971 to 1974, T7598 a trend from 1975 to 1998, T9900 a trend from 1999 to 2000 and C is a constant.

Table 2 shows the result of controlling for the endogeneity of the real product wage and for an outlier in 1993. As our estimation does not show significant differences in the trend labor productivity we use only one time trend. Furthermore, we use a dummy variable for the years 1999 and 2000. This exercise yields more or less the same parameter estimates and all the qualitative conclusions remain unaffected.

1   Due to data problems, the euro area definition in this paper in general does not include Greece ("EU-11").

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Table 2

Labor Demand Equation Euro Area (alt. specification TSLS)

1971–2000[1])

Variable	Coefficient	t-Statistic
log (Y_{t-1}/N_{t-1})	0.5373	(2.58)
log $(W/P)_t$	−0.3015	(−3.83)
TREND	−0.0059	(−1.97)
D93	−0.0210	(−2.58)
D9900	0.0178	(2.36)
C	4.5149	(3.35)

$R^2 = 0.57$.
DW = 1.61.
Number of observations = 30.
Estimates of structural parameters:
Speed of employment adjustment = 0.54, real wage elasticity of labor demand = −0.56,
trend growth of technical progress = 1.1%.

[1]) Dependent variable log (N_t/N_{t-1}) is employment growth. Y denotes output, WIP real product wage, TREND a trend from 1971 to 2000, D93 is 1 for 93, 0 else, D9900 is 1 in the years 1999 and 2000, and C is a constant, log $(WIP)_{t-1}$ is used as instrument.

3 Aggregate Wage Developments[1])

The 1990s saw impressive progress regarding nominal stabilization in the euro area in terms of both prices and wages. Inflation rates (measured by the GDP deflator) had been in double digits for most of the 1970s and the early 1980s; while gradually abating thereafter, inflation picked up again in the boom period of the late 1980s, running up to almost 6%. In the 1990s, however, a remarkable disinflation process developed and the inflation rate fell below the 2%-mark by 1997. While the lackluster overall economic performance over that period certainly contributed to a reduction in inflationary pressures, there can be little doubt that the achieved high degree of price stability was primarily the result of the systemic changes associated with the run-up to EMU. With price stability and a high degree of sustainable convergence being key requirements for adopting the euro, cross country differences in inflation rates also narrowed dramatically in this process.

Chart 1

Nominal Wage Growth per Employee 1970–2001
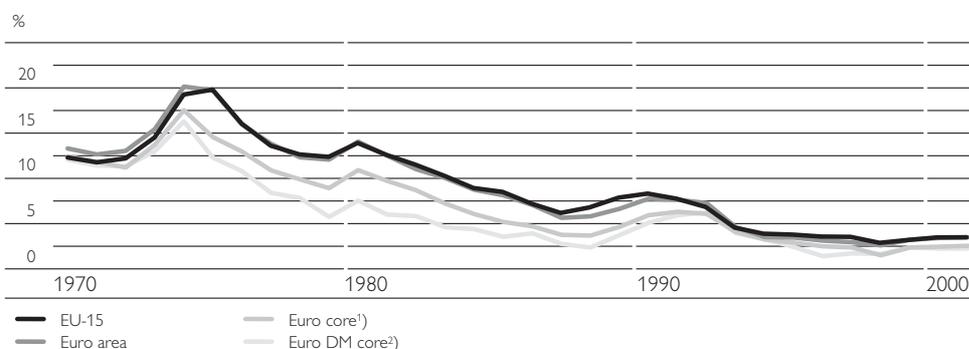
Source: European Commission.
[1]) Austria, Germany, Belgium, Netherlands, Luxembourg, France, Italy.
[2]) Austria, Germany, Belgium, Netherlands, Luxembourg.

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1   See Pichelmann (2001).

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For the euro area as a whole, nominal wage growth per employee declined almost in parallel with price stabilization, with nominal compensation per worker estimated to increase, on average, by about 3% annually at the present conjuncture. From a bird's eye view, thus, the actors in the wage bargaining process appear, in general, to have taken on board the price stability objective set by the ECB (chart 1).

As a by-product of nominal stabilization, the absolute dispersion of nominal wage growth across countries also diminished significantly over the past decade. Chart 2 depicts the evolution of the (unweighted) standard deviation of nominal wage growth per worker for the EU-15, the euro area, the EUR-DM-core (Austria, Germany, Belgium, the Netherlands and Luxembourg) and a so-called "euro core group" of countries additionally comprising France and Italy. Over- all, nominal wage growth dispersion clearly trended downwards over the past decade, resulting in fairly similar nominal wage developments in the recent past, in particular in the euro core countries.

Chart 2

Nominal Wage Growth per Employee 1970–2001

Standard deviations

Source: European Commission.
¹) Austria, Germany, Belgium, Netherlands, Luxembourg, France, Italy.
²) Austria, Germany, Belgium, Netherlands, Luxembourg.

However, in 2000 the absolute dispersion of nominal wage growth per worker among the "big four" euro area countries (Germany, France, Italy and Spain) still amounted to 1.7 percentage points (ranging from 1.7% in Germany to 3.4% in Spain). Money wages increased somewhat faster in Finland and the Netherlands, probably reflecting different cyclical positions; the highest rates of nominal wage growth were observed in Ireland, Portugal and Greece. Thus, there still remains a significant dispersion of rates of growth in money wages in

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the EU-11 rendering any notion of fully harmonized wage developments in the euro area as clearly inadequate.[1])

It should be noted, though, that cross-country differences in productivity levels and increases actually limit the warranted degree, if any, of wage synchronization; in fact, allowing wages to reflect these differences is not inefficient or inequitable but rather a means to allow real wage levels to converge over time. Thus, stronger nominal wage increases in some countries enjoying faster growth of per capita output and of labor productivity need not be a particular reason of concern.

In summary, nominal unit labor cost inflation in the euro area has quickly fallen within the bandwidth consistent with the price stability goal as defined by the ECB. Moreover, despite a marked reduction of unemployment over the past few years (from 11.5% in 1997 to below 9%) up to date there have been few signs of a reacceleration of nominal unit labor cost growth in the area as a whole. Admittedly, several countries which have experienced a few years of sustained growth and where the labor market has become relatively tight, namely Ireland, the Netherlands and Portugal, appear to be relatively more exposed to eventual wage pressures; furthermore, the labor cost impact of the reduced working week in France may be felt more strongly, once compensating productivity increases start abating. However, all in all, there can be little doubt that the early years of EMU, including several years of the run-up to monetary union, have seen an impressive amount of nominal wage discipline, which can hardly be explained without recourse to changes in underlying behavioral relations.[2])

Corroborative evidence for overall wage discipline is to be found in the evolution of real product wages adjusted for productivity. Obviously, in its simplest form, this boils down to the analysis of real unit labor cost developments, mirroring changes in the share of labor in total income. However, following the lines of Blanchard (1997, 1998), we prefer to replace apparent labor productivity by a measure of labor efficiency based on Harrod-neutral technical progress, thus computing a measure of real wages in efficiency units. Furthermore, to construct a somewhat refined real wage gap indicator, real product wages are augmented by a factor representing the wage-dampening effect of a positive unemployment gap. For the sake of simplicity, the resulting series are normalized to zero in 1970.

The wage gap indicator is derived from a simple wage-setting equation relating the *real product wage in efficiency units (w/e)* to the unemployment rate *UR* and a shift parameter *Z* that captures other relevant labor market conditions affecting wage pressure in a log-linear manner:

$$log\ (w/e) = -b.\ UR + Z, \tag{4}$$

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1 Indeed, when the coefficient of variation in nominal wage growth rates is taken as a yardstick, the relative dispersion of nominal wage increases appears to have even somewhat increased over time. However, the distinctive behavior of a core group of EU-11 countries exhibiting more closely synchronized nominal wage behavior is also preserved when looking at measures of relative dispersion.

2 Put more formally, out-of-sample predictions of wage equations estimated up to the early 1990s generally tend to over-predict wage developments in subsequent years (OECD, 2000).

with b denoting the elasticity of real wages in efficiency units with respect to unemployment. The real product wage (w) is the gross nominal wage (including employers' contributions to social security) divided by the GDP deflator. The series for labor efficiency (e) is derived under the assumption of Harrod-neutral technical progress as the Solow residual divided by the labor share, reflecting the condition for labor productivity growth along the balanced growth path. A real wage gap indicator can then be constructed using $Z = log\,(w/e) + b\,UR$, with b set to 1 and, finally, normalizing the series to equal zero in 1970.

The evolution of the labor-capital ratio in efficiency units is given by $log\,(Ne/K)$, where N denotes total employment, and K is the real capital stock; for convenience, the series is again normalized to equal zero in 1970. The employment intensity of growth is defined as growth in total employment per unit of output growth over the respective period.

Chart 3 below shows the results for the evolution of the refined wage gap indicator for the euro area[1]), assuming a value of one for the unemployment elasticity of real wages. Overall the series shows a large increase in the wage gap indicator variable over the 1970s, with a peak of more than 10% in the early 1980s; thereafter, wage pressure gradually abated, with the exception of the 1991-1994 period, when the wage gap started to widen again despite unemployment still hovering around in the 8% range.

Chart 3

Real Wage Gap Indicator Euro area

1970 = 0

Source: Own calculations.
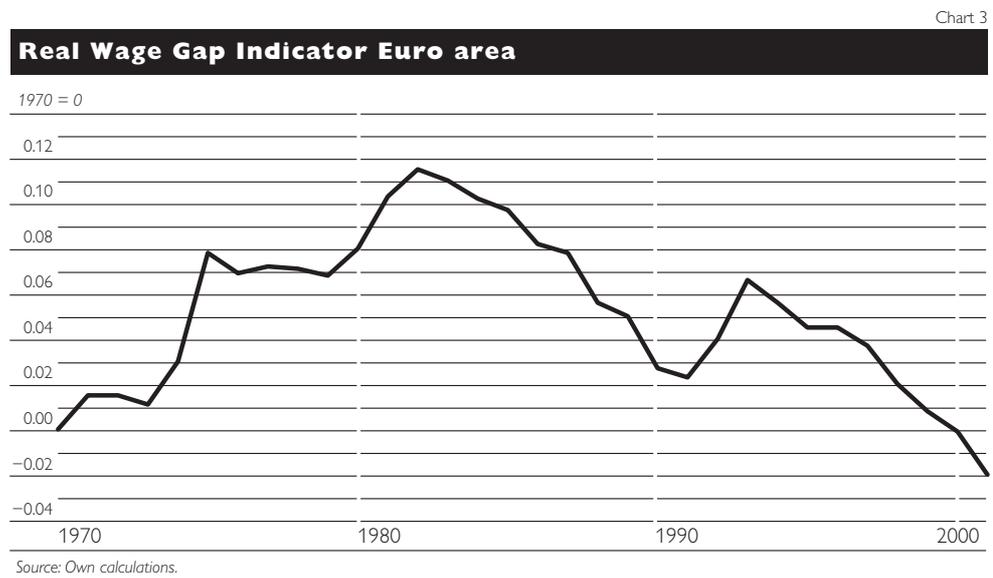
The second half of the 1990s was characterized by a continued process of wage moderation resulting in a monotonic decline of the wage gap indicator. At present the real wage in efficiency units for the area as a whole appears to have even fallen below its level in the beginning of the 1970s. Taking the increase of unemployment into account, the real wage gap indicator has approximately returned to its value of 30 years ago.

Evidently, real wage moderation has borne fruit and contributed to the dynamism in job creation in recent years, increasing both the employment

1   In the following calculations Greece is included ("EU-12").

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intensity of growth[1]) and the labor-capital ratio in efficiency units (charts 4
and 5). The unemployment rate of the area has decreased significantly from its
peak of 11.5% to below 9%, yet wage developments have remained subdued.

Chart 4

Employment Intensities of Growth

■ 1987–1991   ■ 1995–2000

Source: European Commission.

Chart 5

Labor-Capital Ratio in Efficiency Units, Euro area

Source: Own calculations.

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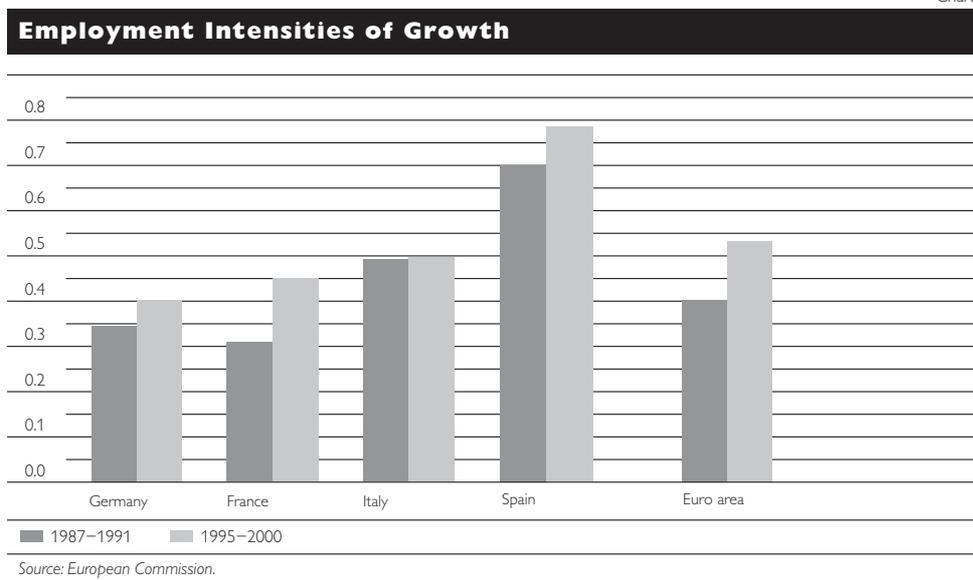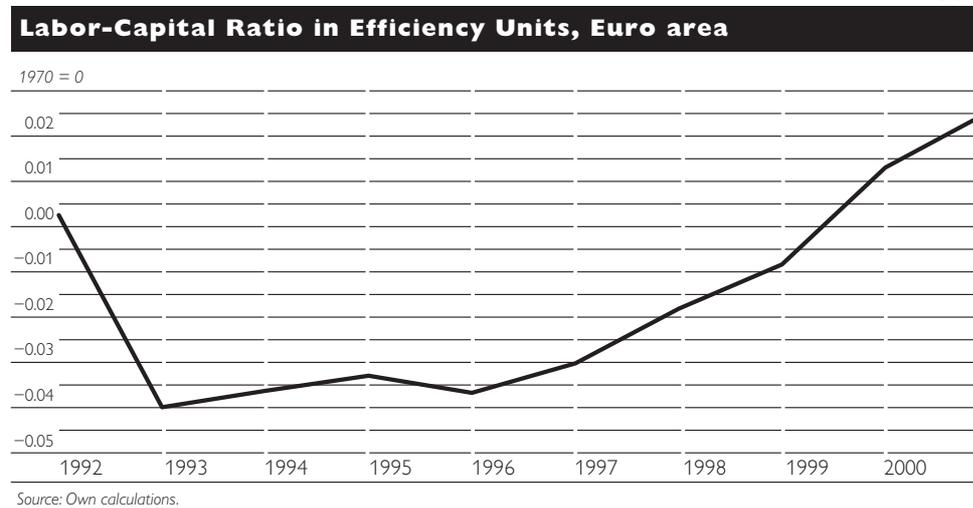
1   *Employment intensity of growth is defined as growth of employment divided by growth of GDP.*

4 The Cyclical Behavior of Unemployment and Okun's Law in the Euro Area

This section takes a quick look at the cyclical behavior of the overall unemployment rate in the euro area[1]). The analytical tool used is known as Okun's law describing the relation between the cyclical component of unemployment and the deviation of actual output from potential.

Briefly recapitulating the approach, consider the following variant of Okun's law

$$UR - UR^* = -\mu(Y - Y^*),\qquad(5)$$

where UR denotes the actual rate of unemployment, UR^* is the (unobserved) rate of structural unemployment and $(Y - Y^*)$ is a measure of the output gap.[2]) The Okun coefficient μ characterizes the transmission of cyclical fluctuations in output into cyclical variations in the unemployment rate.

Assuming that structural unemployment has remained constant over time would lead to a straightforward estimation of (5) in the form of

$$UR_t = const - \mu(Y - Y^*)_t + e_t\qquad(6)$$

However, given that structural unemployment in the euro area cannot plausibly be depicted as constant over time, a flexible specification for the time path of UR^* is used, simply by allowing for different trough-to-trough polynomial trends in structural unemployment with the order of polynomials, if necessary, running up to three. The estimation equation in its general form then reads as

$$UR_t = const + \Sigma(p_{1i}T_i + p_{2i}T_i^2 + p_{3i}T_i^3) - \mu(Y - Y^*)_t + e_t,\qquad(7)$$

where the trough-to-trough time trends T_i run from 1975 to 1983, from 1984 to 1993, and from 1994 onwards, respectively. Moreover, to test for different developments in the more recent past an additional time trend running from 1998 onwards has been inspected. Finally, for a rough check on parameter stability over time, we also estimate the Okun relation over the restricted time period of the past ten years, i.e. 1989-2000.

Before turning to the econometric estimation results, one should note that this methodology and estimation strategy tends, almost by definition, to force the time path of structural unemployment quite close to actual unemployment. This can easily be seen from equation (5), since for an (expected) value of μ between 0 and 1, the cyclical component of unemployment can never exceed the (absolute) value of the output gap. And, of course, approximating the evolution of UR^* over time with the help of polynomial trends does not give any clue on the underlying causes of movements in structural unemployment. Despite these obvious shortcomings, though, a sensible empirical estimate of the parameter μ may be regarded as a useful stylized fact concerning the cyclical behavior of unemployment in the euro area.

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1   *Again euro area does not include Greece ("EU-11").*
2   *The time series for the output gap is taken from the AMECO-database.*

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The estimation results are presented in tables 3 and 4. Table 3 shows the results of the OLS estimation of equation (7) over the 1970 to 2000 period in a parsimonious specification, where insignificant terms have been removed from the equation.

Table 3

Okun's Law in the Euro Area (OLS) 1970–2000[1])

Variable	Coefficient	t-Statistic
YGAP	−0.2841	(5.73)
T7583	0.5759	(25.00)
T8493	1.0459	(5.57)
T8493**2	−0.2748	(5.05)
T8493**3	0.0197	(5.31)
T9800	−0.6762	(8.51)
C	3.1993	(28.10)

R^2 = 0.99.
DW = 1.47.
Number of observations = 31.

[1]) Dependent variable UR is the unemployment rate. YGAP denotes the output gap, T7583 is a trend from 1975 to 1983, T8493 a trend from 1984 to 1993, T9800 a trend from 1998 to 2000, and C is a constant.

The Okun coefficient μ is estimated at 0.28 according to the specification in table 3. This result would suggest that, roughly speaking, averaged over the 1970 to 2000 period a negative output gap of 1% drove up unemployment in the euro area by about three tenths of a percentage point. Thus, the cyclicality of unemployment was not very pronounced in the euro area when compared to the U.S.A., where the corresponding estimate is perhaps around ½ (Holloway, 1989). Various forms of labor hoarding, probably stimulated by relatively strict employment protection regulation, and fairly pronounced reactions of participation rates have apparently dampened the unemployment response in the business cycle.

It remains to be tested, however, whether this behavioral regularity can also be validated for the more recent past. Thus, for a rough test on behavioral stability over time, the Okun relation has also been estimated for the restricted time period of the past decade, i.e. 1989-2000. The results of this exercise are depicted in table 4.

Table 4

Okun's Law in the Euro Area (OLS) 1989–2000[1])

Variable	Coefficient	t-Statistic
YGAP	− 0.8184	(12.60)
T9800	− 0.5571	(5.27)
C	10.5725	(91.50)

R^2 = 0.94.
DW = 2.01.
Number of observations = 12.

[1]) Dependent variable UR is the unemployment rate. YGAP denotes the output gap, T9800 is a trend from 1998 to 2000, and C is a constant.

The empirical results indicate that the Okun coefficient is estimated to have been much higher in the most recent business cycle. We conduct a simple filtering exercise to show evidence from time series analysis for the driving

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force behind this increase. The Okun coefficient is estimated in the following way:

$$\mu = REY^*(1 - RLFE), \qquad (8)$$

where REY denotes the cyclical responsiveness of employment to GDP, and $RLFE$ denotes the cyclical responsiveness of the labor force to employment.

Table 5 presents the results of this approach. In accordance with the regression results, table 5 shows that the Okun coefficient for the euro area rose from 0.32 in the period from 1970 to 1990 to 0.73 in the 1990s. This effect was mainly driven by the strong increase in employment responsiveness. By contrast, the Okun coefficient for the U.S.A. is still around 0.4.

Against this background, it may be reasonably concluded that labor market reforms in the 1990s in Europe were successful insofar as rigidities with respect to employment decisions were evidently significantly reduced. However, the apparent increase in overall employment flexibility may also reflect a much stronger segmentation of the labor market.

In fact, in a number of EU countries regulations on employment contracts have been significantly eased, in particular on so-called "atypical" employment contracts such as part-time jobs and temporary work. Thus, with sustained strict employment protection regulation on regular contracts, there have been additional incentives to switch from permanent contracts to more flexible work arrangements. While this may have helped to achieve the required workforce flexibility in otherwise still fairly rigid labor markets, it may have also led to a more segmented labor market in which those with permanent contracts benefit both from employment protection legislation and from increased bargaining power by virtue of a growing number of workers in "atypical" forms of employment.

Table 5

The Cyclical Responsiveness of Labor Markets

| | Employment to GDP[1]) | | Labor force to employment[2]) | | Okun's μ[3]) | |
| | (1) | | (2) | | (3) | |
	1969−1989	1989−2000	1969−1989	1989−2000	1969−1989	1989−2000
France	0.46	0.68	0.29	0.11	0.33	0.61
Germany	0.44	0.71	0.47	0.38	0.23	0.44
Italy	0.22	0.89	0.85	0.58	0.03	0.38
Spain	0.83	1.33	0.35	0.10	0.54	1.20
Austria	0.46	0.72	0.81	0.74	0.09	0.19
Belgium	0.54	0.67	0.16	−0.25	0.45	0.83
Finland	0.62	0.93	0.25	0.35	0.41	0.69
Ireland	0.73	0.56	0.53	0.51	0.34	0.27
Luxembourg	0.21	0.52	0.79	0.76	0.04	0.12
Netherlands	0.51	0.97	0.64	0.36	0.18	0.62
Portugal	0.35	0.84	0.64	0.66	0.13	0.29
Euro area	0.52	1.08	0.38	0.32	0.32	0.73
U.S.A.	0.58	0.56	0.29	0.32	0.41	0.38

[1]) Estimated coefficient in a regression of the deviations of employment from trend on the deviation of GDP from trend, where the trends have been established by the Hodrick-Prescott filter imposing identical smoothing factors for employment and GDP in all countries.

[2]) Estimated coefficient in a regression of the trend deviation in the labor force on the trend deviation of employment, where the trends have been established by the Hodrick-Prescott filter imposing identical smoothing factors for employment and the labor force in all countries.

[3]) Estimated Okun coefficients as implied by the cyclical responsiveness of employment to GDP (1), and the cyclical responsiveness of the labor force to employment (2): calculated as (1) times [1 − (2)].

The configuration of the fitted time trends to capture the movements in structural unemployment in table 3 can be used for inferences about the time profile of the structural rate. They are indicative of a straightforward linear increase in structural unemployment over the 1975-1983 period from a starting value of about 3% to more than 8% at the cyclical trough in 1983; from 1984 onwards the estimate for structural unemployment in what is today the euro area (excl. Greece) hovers around in the 9-10% range until the next cyclical trough in 1993, with some tendency to reflect to a small extent and with a lag of one to two years movements in actual unemployment. Structural unemployment is estimated to have remained more or less constant at stubbornly high levels for the next few years, before starting to decrease significantly from 1998 onwards. Depending on the specification, the trend annual fall in the structural rate is estimated at between 1/2 to 2/3 of a percentage point for the period 1998-2000.[1])

5 Concluding Remarks

This paper has attempted to establish a few stylized facts about the euro area's labor market given the even increased importance of smoothly functioning markets in a monetary union. We assembled econometric evidence regarding labor demand behavior, the development of real wages and the cyclicality of unemployment in the euro area.

We estimated a real wage elasticity of labor demand at between –0.5 to –0.6; thus, a 1% decrease in real product wages increases, for a given output, employment demand by 0.5% to 0.6%. Furthermore, around 50% of adjustment towards the optimal employment level was achieved in one year. Autonomous technical progress is estimated to have averaged 1.1% per year, a value which falls significantly short of the trend growth rate of actual labor productivity amounting to 1.9% in this time span.

In section 3 we provided a short review of a few stylized facts regarding nominal wage developments and construct a wage gap indicator to capture the movement of real wages in labor efficiency units. This exercise reveals that the second half of the 1990s was characterized by a continued process of wage moderation. The real wage in efficiency units for the euro area appears to have fallen below its level in the beginning of the 1970s. Taking the increase of unemployment into account, the wage gap indicator has returned to approximately its value 30 years ago.

In section 4 we investigated the cyclical behavior of unemployment in the euro area by looking at the reaction of the cyclical component of unemployment to deviations of actual from potential output. We found that in the 1990s, unemployment cyclicality was higher in the euro area than in the U.S.A., while the opposite had been true in the previous two decades. The main reason for this is apparently that employment in the euro area now responds much more

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1   It may be noted that the Okun approach presented here suggests a somewhat stronger fall in the structural unemployment rate in recent years than the NAIRU (Non-accelerating Inflation Rate of Unemployment) estimates provided by the OECD and the IMF. However, compared to the Okun estimate of the structural rate presented here, the NAIRU series as provided by the OECD and the IMF also shows a less pronounced increase in the first half of the 1990s.

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strongly to cyclical fluctuations in output than in the past, and even somewhat more strongly than in the U.S.A. Furthermore, we observed a significant downward trend in structural unemployment over the past few years, with the cumulated fall in the structural rate over the period 1998-2000 estimated at between 1½ to 2 percentage points.

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Wage Setting and Strategic Interaction With and Without a Monetary Union

1 Introduction
Markus Knell

The establishment of Economic and Monetary Union (EMU) has decisively changed European money and financial markets (Favero et al., 2000). Besides, it is often argued that the foundation of EMU may, for a number of reasons, have fundamental consequences for the organization and the functioning of European labor markets. First, economists maintain that the establishment of EMU will initiate or accelerate processes that will change the economic environment within which product and labor markets operate. The elimination of exchange rate fluctuations, e.g., is expected to further increase product market integration, intensify competition and step up deregulation (Burda, 1999; Andersen et al., 2000). In addition, the use of a common currency could boost euro area-wide price transparency, thereby exposing national firms to a higher level of competitive pressure. All of this could then translate into changes on the labor market, increasing the elasticity of (derived) labor demand and reducing monopoly profits and thus the possibility of rent-sharing arrangements between employers and employees (Nickell, 1999). These lines of argument emphasize the effect of EMU on the economic environment, yet they are typically based on the premise that institutional structures remain the same.

A second class of literature focuses on institutional changes and structural reforms that would be brought about by the changes in the economic environment and the shifts in the incentive structure associated with these developments. Some authors contend that EMU membership could increase the incentives to move toward higher levels of both national and transnational wage-bargaining coordination (Holden, 1999), while a number of others doubt the feasibility of such reforms (Calmfors, 2001). Moreover, many authors underline that EMU could generally change the structure of European labor markets by helping to overcome socio-political impasses or by increasing the willingness to reform and "flexibilize" these markets (Bean, 1998, Sibert and Sutherland, 2000; Hefeker, 2001).

In the two lines of thought laid out above, the impact of EMU on labor markets is, however, only a consequence of *real-world* changes in economic or institutional structures. A third argument predicts an impact on European labor markets that is solely caused by the change in the monetary policy regime and that is independent of any eventual changes in the real-world structure. The argument is built on the assumption of nonatomistic unions and/or firms that take the impact of their wage and price decisions on aggregate demand and on central bank behavior into account. Centralized unions (or highly coordinated wage bargaining partners) realize that excessive wage claims will be translated into corresponding price increases. This could in turn induce inflation-averse central banks to raise interest rates, thereby lowering aggregate demand and, pari passu, product and labor demand.

Since centralized unions anticipate this chain of events and since they typically have an interest in both real wages and employment, they will enter bargaining with appropriately lower wage claims, and thus unemployment will remain low as well.

The formation of EMU, however, could fundamentally change this situation of strategic interaction. "All unions become smaller units of a broader monetary area with the formation of the monetary union. This reduces their perception of

the inflationary repercussions of their individual wages, inducing them to be more aggressive in their wage demands" (Cukierman and Lippi, 2001, p. 541). According to this line of thought, the mere change of the monetary regime and the associated changes in the strategic environment thus lead to more aggressive wage-setting behavior and to negative implications for European unemployment.

While this argument may sound convincing at first glance, a closer look reveals that it is not necessarily valid. First of all, it is unclear how the application of the closed economy model to open economies could change the picture, considering that up to now, this chain of reasoning has usually been analyzed for closed economy models (Cukierman and Lippi, 2001; Grüner and Hefeker, 1999; Soskice and Iversen, 1998). Second, it must be taken into consideration that joining a monetary union could cause individual labor unions' wage demands to be more aggressive (because an inflation-averse common central bank will react less strongly than a national one), but wage demands could also become more moderate if an inflation-averse and at the same time stability-oriented central bank responds in a more subdued fashion to rising national unemployment. These two arguments are reviewed in depth in section 3 of this study after an open economy model is presented in section 2. The results are summarized in section 4.

2 An Open Economy Model

The two-country model used in this study follows Knell (2002). It describes the structure of the domestic economy ("home," indexed by H) while the structure of the foreign economy (indexed by F) is similar. Firms and households in the $[0, \gamma]$ interval are assumed to be located in country H while agents in the interval $[\gamma, 1]$ operate in country F. There exists a continuum of monopolistic competitive firms to which K unions are attached in equal proportions.[1] Strategic interaction between firms, unions and the central bank is as follows: In the first stage, the unions choose nominal wages. In the second stage, firms simultaneously choose prices, output and employment, taking as given the level of nominal wages set in the first stage. In the third stage, the central bank sets the money supply and finally – in the fourth stage – the nominal exchange rate adjusts such that the balance of trade is in equilibrium. The game is solved by backward induction.

2.1 Structure of the Economy

The firms have the following demand functions:

$$y_i^h = -\theta(p_i^h - p_H) - (p_H - p) + \gamma(m - p) + (1 - \gamma)(m^* - p^*) \qquad (1)$$

$$y_i^f = -\theta(p_i^{*f} - p_F^*) - (p_F^* - p^*) + \gamma(m - p) + (1 - \gamma)(m^* - p^*), \qquad (2)$$

where all lower-case letters are log variables, $y_i^h(y_i^f)$ is the demand for the good produced by the home (foreign) firm i, $p_i^h(p_i^{*f})$ is the price charged by this firm,

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1   As in Coricelli et al. (2000), the firms are assumed to be indexed such that all firms whose labor force is represented by union j are located in the subinterval $[\gamma\frac{j-1}{K}, \gamma\frac{j}{K}]$ where $j = 1, 2, ..., K$.

$p_H(p_F^*)$ is the home-currency consumption-based price index for goods produced in $H(F)$, $p(p^*)$ is the total price index in $H(F)$, and $m(m^*)$ is the level of home (foreign) money supply.[1])

The parameter γ measures the relative size of country H and $\theta > 1$ measures the elasticity of substitution. The price indices are given by:

$$p_H = \frac{1}{\gamma} \int_0^y p^h(i)di \qquad (3)$$

$$p_F^* = \frac{1}{1-\gamma} \int_\gamma^1 p^{*f}(i)di \qquad (4)$$

$$p = \gamma p_H + (1-\gamma)p_F \qquad (5)$$

$$p^* = \gamma p_H^* + (1-\gamma)p_F^*. \qquad (6)$$

It is assumed that the law of one price holds, i.e. that $p_i^{*h} + e = p_i^h$ and $p_i^{*f} + e = p_i^f$, where e is the (logarithm of the) nominal exchange rate. From the definition of the price indices (3), (4), (5) and (6) it follows that the purchasing power parity also holds for the composite commodities and the overall consumer price indices:

$$p_H^* + e = p_H, p_F^* + e = p_F \text{ and } p^* + e = p. \qquad (7)$$

Each firm has the following linear production function:

$$y_i^h = l_i^h \qquad (8)$$

$$y_i^f = l_i^f, \qquad (9)$$

where $l_i^h(l_i^f)$ is the amount of labor employed by firm i.

2.2 Monetary Policy and the Exchange Rate Regime

Both central banks are assumed to follow a monetary policy rule which states how money supply is adjusted in response to changes in the price level and in unemployment. In particular:

$$m = \tilde{m} + \beta_H^p p + \beta_H^u u_H \qquad (10)$$

$$m^* = \tilde{m}^* + \beta_F^p p^* + \beta_F^u u_F \qquad (11)$$

In this context $\tilde{m}(\tilde{m}^*)$ is the exogenously given (or discretionary) part of the monetary rule, and β measures how accommodating the monetary policy

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1 *Variables denoted with an asterisk are expressed in the foreign currency.*

reaction is to changes in domestic inflation (or price levels) $p(p^*)$ and domestic unemployment u_c stands for the respective country, thus $c \epsilon \{H, F\}$). Moreover, it is assumed that $\beta_c^p, \beta_c^u \epsilon [-\infty, 1]$. If, e.g., a monetary authority reacts restrictively to a rise in the price level, the degree of accommodation of its monetary policy will be low (β_c^p will be small). A higher value of β_c^u indicates that the central bank accommodates the increase in unemployment by letting the money supply expand more strongly.

Once a central bank has made its monetary policy decision, the exchange rate will adapt in such a way that the current account is in equilibrium. In the model at hand, this means that the equilibrium condition $m - p = m^* - p^*$ has to be fulfilled (Knell, 2002). In cases in which a country has a target nominal exchange rate, it forgoes the possibility of independent monetary policy. If, e.g., country H wishes to pursue a target nominal exchange rate, it must set $\beta_H^p = \beta_F^p$ and $\beta_H^u = \beta_F^u$.

In a monetary union, however, monetary policy is fixed by a single central bank that follows the monetary policy rule given by:

$$m_{MU} = \tilde{m}_{MU} + \beta_{MU}^p \bar{p} + \beta_{MU}^u \bar{u}, \tag{12}$$

where $\tilde{m}_{MU}$ is the per capita money supply of the whole monetary union, $\tilde{m}_{MU}$ is the exogenous factor of the monetary policy rule, and β_{MU}^p and β_{MU}^u are the accommodation parameters of the common central bank to changes in the price level and in unemployment, respectively, and $\bar{p}$ and $\bar{u}$ are weighted averages, i.e. $\bar{p} = \gamma p + (1 - \gamma)p^*$ and $\bar{u} = \gamma u_H + (1 - \gamma)u_F.$[1])

2.3 Solution

2.3.1 General Solution

In solving the model by backward induction, we can start directly with the second stage (the firms' decisions), since the third stage (the setting of monetary policies) and the fourth stage (the determination of the exchange rate) are given by monetary rules and by equilibrium conditions. In stage 2, firms simultaneously maximize their profits, taking as given the nominal wages w_i^h and the prices set by the other firms (both in H and in F). This leads to the simple markup pricing rule: $p_i^h = \mu + w_i^h$, where $\mu \equiv \left(\frac{\theta}{\theta - 1}\right)$ is the identical markup for all firms. Aggregation across firms leads to the following *price-setting equation:*

$$p_H = \mu + w_H, \tag{15}$$

where $w_H \equiv \frac{1}{\gamma} \int_0^\gamma w^h(i) di$. Similarly, the following aggregated price-setting equation is derived for foreign country F:

$$p_F^* = \mu + w_F^*. \tag{16}$$

In the first stage, each union is assumed to choose nominal wages, treating the wages chosen by the other unions as given and taking into account the subsequent pricing decisions of firms, the monetary policy rules and the equilibrium

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1   At $e = 0$, $p = p^*$, *so that the average community-wide price index is:* $\bar{p} = \gamma p + (1 - \gamma)p^* = p$.

level of the exchange rate. Employees belong to one of $K(K^*$ in the foreign country) identical unions (indexed by j), where each union represents an equal share of the total labor force. The *degree of centralization of wage-bargaining* is denoted by $\sigma_H \equiv 1/K (\sigma_F \equiv 1/K^*)$ ranging from 0 (complete decentralization) to 1 (complete centralization)[1]). The loss function of union j includes the target level of its members' real wages and their employment situation. From these assumptions, the following aggregrated *wage-setting equation* may be derived:

$$w_H - p_H = \widetilde{w} + (1-\gamma)(p_F - p_H) - \frac{\lambda_H^r}{Z_H^r} u_H, \tag{17}$$

where u_H denotes the unemployment rate in H, $\tilde{\omega}$ the unions' real wage target, $Z_H^r \equiv 1 - \frac{dp}{dw_j^h}$ is the elasticity of real wages with respect to nominal wages, $\lambda_H^r \equiv -\frac{dl_j^h}{dw_j^h}$ is the wage elasticity of labor demand, and the superscript $r\epsilon\{EX, MU\}$ stands for the respective exchange rate regime (regime with two currencies, two central banks and one exchange rate, or a monetary union with one central bank and no exchange rates, respectively). The elasticities for the different regimes will be calculated below, but for the moment the unspecified form given in (17) will suffice. The corresponding aggregate wage-setting equation for foreign country F can be calculated using the same steps as in the previous section:

$$w_F^* - p_F^* = \widetilde{w} + \gamma(p_H^* - p_F^*) - \frac{\lambda_F^r}{Z_F^r} u_F, \tag{18}$$

where the elasticities Z_F^r and λ_F^r are defined analogously to those of country H and where it is assumed that all unions in the countries H and F have the same real wage target $\tilde{\omega}$. To close the model, an additional equilibrium (terms-of-trade) condition $(p_F - p_H = u_F - u_H)$ must be used together with equations (15), (16), (17) and (18):

$$u_H^r = \frac{(\mu + \tilde{\omega})Z_H^r(\lambda_F^r + Z_F^r)}{\gamma\lambda_H^r Z_F^r + (1-\gamma)\lambda_F^r Z_H^r + \lambda_H^r\lambda_F^r} \tag{19}$$

$$u_F^r = \frac{(\mu + \tilde{\omega})Z_F^r(\lambda_H^r + Z_H^r)}{\gamma\lambda_H^r Z_F^r + (1-\gamma)\lambda_F^r Z_H^r + \lambda_H^r\lambda_F^r} \tag{20}$$

Before calculating the elasticities, the equation will be rearranged on the basis of an aggregation of equations (1) and (2), which results in the following reduced-form monetary policy rules:[2])

$$m = g_H + \frac{\beta_H^p}{1 + \beta_H^u} p + \frac{\beta_H^u}{1 + \beta_H^u} p_H \tag{21}$$

1   *Bratsiotis and Martin (1999) and Coricelli et al. (2000) use a similar structure.*
2   *The production functions (8) and (9) and the definitions $u_H = \tilde{l}_H - l_H, u_F = \tilde{l}_F - l_F$ are used here as well, where $\tilde{l}_H(\tilde{l}_F)$ stands for the labor force in country $H(F)$. This may be algebraically rearranged to $u_H = \tilde{l}_H + (1-\gamma)(p_H - p_F) - (m-p)$ and $u_F = \tilde{l}_F + \gamma(p_F^* - p_H^*) - (m^* - p^*)$, respectively.*

$$m^* = g_F + \frac{\beta_F^p}{1 + \beta_F^u} p^* + \frac{\beta_F^u}{1 + \beta_F^u} p_F^* \qquad (22)$$

$$m_{MU} = g_{MU} + \frac{\beta_{MU}^p + \beta_{MU}^u}{1 + \beta_{MU}^u} \bar{p}, \qquad (23)$$

where g_H, g_F and g_{MU} are constants that have no impact on the following analysis. These equations imply that a central bank which also pursues an unemployment target (i.e. $\beta_c^u \neq 0$) reacts to price changes of goods manufactured domestically (which means those manufactured by domestic labor) in a particular fashion. The central bank in $H(F)$ thus accommodates price increases in $p_H(p_F^*)$ depending on the size of parameter β_c^u in addition to changes in $p(p^*)$. However, if $\beta_c^u = 0$, this special role of the price level of domestically produced goods does not apply, and the reaction of either central bank may again be expressed solely in terms of the general price level $p(p^*)$.

The general equilibrium of this model is given by equations (19) and (20), with the elasticities λ_c^r and Z_c^r calculated using demand functions (1) and (2), production functions (8) and (9), monetary policy rules (21) through (23) and price indices (3) through (6).[1])

2.3.2 Solution for Both Monetary Policy Regimes

In the regime prior to formation of a monetary union, the elasticities are:

$$\lambda_H^{EX} = \theta(1 - \sigma_H) + \sigma_H \frac{1 - \gamma \beta_H^p}{1 + \beta_H^u} > 0$$

$$\lambda_F^{EX} = \theta(1 - \sigma_F) + \sigma_F \frac{1 - (1 - \gamma)\beta_F^p}{1 + \beta_F^u} > 0 \qquad (24)$$

$$Z_H^{EX} = 1 - \gamma \sigma_H > 0$$

$$Z_F^{EX} = 1 - (1 - \gamma)\sigma_F > 0.$$

Note that monetary developments have effects on the real economy only if there are nonatomistic unions ($\sigma_c > 0$). Only then do the parameters β_c^p and β_c^u play a role in determining the equilibrium level of unemployment. If this is not the case, the equilibrium is determined solely by the "real" parameters $\mu, \tilde{\omega}$ and θ and thus corresponds to the conventional understanding of the dichotomy of money.[2])

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1   *For more details, see Knell (2002). The central derivation is obtained by a rearrangement of the price indices:* $\frac{\partial p_H}{\partial w_j^h} = \frac{1}{K} = \sigma_H$ *bzw.* $\frac{\partial p_F^*}{\partial w_j^{*f}} = \frac{1}{K^*} = \sigma_F.$

2   $\lambda_c^{EX} = \theta$ *is obtained for* $\sigma_c = 0$, *and the unemployment rates in (19) and (20) no longer depend on* β_c^p *or* β_c^u.

How may this result be interpreted? Union j in country H watches over the employment status of its members and over their real wages.[1]) The extent of the effect of a nominal wage increase on these two target variables is given by elasticities λ_H^{EX} and Z_H^{EX}. A nominal wage increase will directly entail price increases of the firms whose employees the respective union represents. This has a relative price effect and a real demand effect. The *relative price effect* is given by the deteriorating competitiveness of the firms which raise prices. This in turn may result in a decrease in labor demand and in employment cuts. As equation (24) shows, the relative price effect $\theta(1 - \sigma_H)$ will be higher the more competitive the product market (the higher θ) is and the lower the centralization degree σ_H is. A strongly centralized wage bargaining structure signifies that a majority of domestic companies is represented by the same union(s) and that wage increases are thus concluded for most firms, so that the deterrent effect of relative price changes is weakened.

The *real demand effect,* on the other hand, encompasses a variety of effects on the aggregate demand for goods caused by wage-induced price rises. These increases will generally boost the price of products manufactured in country H, which, through terms-of-trade effects, also worsens domestic firms' international competitive position. Moreover, these individual price hikes will trigger a rise in general price indices in countries H and F. If the central banks remain completely passive $(\beta_c^p = 0, \beta_c^u = 0)$, this rise in the price level will translate into lower real balances and a drop in the real demand for goods. Accommodating central banks $(\beta_c^p$ and β_c^u are "large") may partly offset declining demand, whereas a drop in demand will have a greater impact if central banks are nonaccommodating $(\beta_c^p$ and β_c^u are "small"). These impacts on international competitiveness and on domestic and foreign demand are reduced to the total real demand effect $\sigma_H \frac{1 - \gamma \beta_H^p}{1 + \beta_H^u}$ in (24). A small union will consider the impact of its own decisions limited, which diminishes the size of (perceived) labor demand elasticity. For centralized unions, however, this demand externality has a greater deterrent effect and will tend to produce more moderate nominal wage settlements. The extent of the "deterrent" (i.e. of labor demand elasticity) is largest when the central bank reacts only little to a rise in unemployment (β_H^u is low) and moreover accommodates price increases merely to a limited degree (β_H^p is low). The size of the country is a factor in that the price of domestic goods has a minor impact on the general price level – the central bank's target – in a small country.

However, nominal wages impact not just employment (and the elasticity of labor demand λ_H^{EX}, to which it is related), but also real wages. Unlike small unions, centralized unions will take into account that nominal wage increases will result in price increases of roughly the same magnitude, leaving real wages almost unchanged in the end (depending, once again, on the size of the country). The term $Z_H^{EX} = 1 - \gamma \sigma_H$ reflects this circumstance.

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1   *The situation in country H is the point of reference for the following discussion. Analogous mechanisms apply to country F.*

Overall, however, high (perceived) labor demand elasticity λ_H^{EX} means that equilibrium unemployment will be lower, whereas high (perceived) real wage elasticity Z_H^{EX} tends to boost unemployment: $\frac{\partial u_H}{\partial \lambda_H^{EX}} < 0, \frac{\partial u_H}{\partial Z_H^{EX}} > 0$.[1]) The influence of the individual structural parameters on unemployment may now be derived using their effects on λ_c^{EX} and Z_c^{EX}. The impact of the monetary policy orientation on unemployment may be calculated easily, as the parameters β_c^p and β_c^u have an impact only on λ_c^{EX}. The result shows that it is best for the development of unemployment if the central bank does not accommodate price increases (if β_c^p is small) and if it does not try to counteract growing unemployment using systematic monetary policy measures (if β_c^u is small). This result – namely that nonactivist, conservative central banks are associated with low unemployment – is characteristic of this literature (from Barro and Gordon, 1983, to Coricelli et al., 2000), but it must be considered with the caveat that this study examines a deterministic model without any shocks, so that there is no basis for a possible monetary policy stabilization function.

The influence of the other structural parameters is less clear, as they (in particular σ_c and γ) impact both on λ_c^{EX} and on Z_c^{EX}. Knell (2002) discusses these cases in a similar model framework, but the current study focuses on the possible impact of a monetary union insofar as this impact may derive from a change in the monetary policy structure. To this end, the equilibrium for the case of a monetary union must be calculated in a first step. Equations (19) and (20) continue to define the equilibrium unemployment rates, but (the common) monetary policy is now defined by (12), which changes the calculation of the elasticities. If this and the other relevant model equations are used, the following result is obtained:

$$\lambda_H^{MU} = \theta(1 - \sigma_H) + \sigma_H \frac{1 - \gamma\beta_{MU}^p + (1-\gamma)\beta_{MU}^u}{1 + \beta_{MU}^u} > 0$$

$$\lambda_F^{MU} = \theta(1 - \sigma_F) + \sigma_F \frac{1 - (1-\gamma)\beta_{MU}^p + \gamma\beta_{MU}^u}{1 + \beta_{MU}^u} > 0 \qquad (25)$$

$$Z_H^{MU} = 1 - \gamma\sigma_H > 0$$

$$Z_F^{MU} = 1 - (1-\gamma)\sigma_F > 0.$$

3 Discussion

These results are now used to take a closer look at the claim that the establishment of EMU will have a significant impact on strategic interaction. This claim is grounded on the fact that unions that were formerly the only "antagonists" of their national central banks now face the single central bank alongside the unions of other countries. This position impairs their perception of (or their ability to take into account) demand externalities, which may induce them to make more aggressive wage demands and may ultimately lead to higher unemployment.

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1   *It may also be shown that $\frac{\partial u_H}{\partial \lambda_F^{EX}} < 0, \frac{\partial u_H}{\partial Z_F^{EX}} > 0$. By analogy, the same applies to country F.*

However, this argumentation is (implicitly or explicitly) based on the premise that the countries forming a monetary union are closed economies. In open economies, unions generally keep very close track of wage developments in other countries, just like the central banks of open economies monitor inflationary developments abroad (insofar as they have an effect on national price indices). Hence, the formation of a monetary union is likely to cause less of a structural break in open economies than in closed economies. The theoretical model presented in this study also demonstrates that if foreign trade links are assumed, the results contradict the conventional argumentation. This claim will be dealt with in more detail below.

3.1 Central Banks Without Real Targets

The case in which the central banks in this study are assumed to target only the price level and have no real target (e.g. an unemployment target) will be discussed briefly first: this means that $\beta_H^u = \beta_F^u = \beta_{MU}^u = 0$ (for an in-depth discussion, see Knell, 2002). Using equations (23) and (24), it can be shown that under the above assumption and additionally assuming that $\beta_H^p = \beta_F^p = \beta_{MU}^p$, elasticities λ and Z are identical in both regimes. As the equilibrium unemployment rates depend solely on these elasticities, they do not change upon a regime change, so that a monetary union has no impact on the real economy in this case. The assumptions under which this "neutrality result" holds are quite plausible. As indicated above, in a fixed exchange rate regime, the home-country monetary policy copies the foreign monetary policy rule by adopting the foreign country's degree of accommodation of monetary policy ($\beta_H^{p,fix} = \beta_F^p$). This ties in well with the example of EMU, as all participating countries were part of a fixed exchange rate system (the EMS) prior to joining EMU and de facto oriented their national monetary policy decisions and strategies on those of the Deutsche Bundesbank. Moreover, it has often been emphasized that the institutional setup and monetary policy orientation of the European Central Bank (ECB) are modeled on those of the Deutsche Bundesbank, so that the assumption that $\beta_F^p = \beta_{MU}^p$ appears to be quite justified. Finally, the European System of Central Bank's (ESCB's) objective of maintaining price stability as laid down in Article 105 (1) of the Treaty establishing the European Community strongly suggests that the ECB pursue only a price stability target, and not a real economic target, which confirms the third key assumption needed to produce the "neutrality result," namely $\beta_H^u = \beta_F^u = \beta_{MU}^u = 0$.

The intuition behind this result may be explained first of all by the fact that the basket of goods and hence the price index in both countries are identical due to the demand structure of the model in this study. In the pre-monetary union period, unions in $H(F)$ heed the effects on p (p^*), and both central banks pursue p (p^*) as their target. This picture is no different in a monetary union, as the new target of the (common) central bank is still given by $\bar{p} = \gamma p + (1 - \gamma)p^* = p$ and as neither the monetary policy rule nor the behavior of the unions change (provided the three above premises are fulfilled). In the closed economy models, on the other hand, a "wedge" is driven between the targets of the national central banks and the target of the common central bank. The former target their domestic price levels (p_H and p_F) while the latter

targets some weighted average of those price levels, and in general these will not coincide.

Of course, this "neutrality result" is valid only under specific assumptions, each of which may be criticized. On the other hand, it also indicates that the frequent assumption of closed economies (Cukierman and Lippi, 2001; Soskice and Iversen, 1998) may produce misleading results in this context. Another study specified the change in the "neutrality result" if the premise is dropped that the two monetary union member countries form a fixed exchange rate regime prior to entry in the monetary union and that the policy of the common central bank reflects the policy of the former "anchor bank." In this study, though, the question will be examined of how the result changes when the premise is abandoned that the central banks do not pursue real targets (e.g. an unemployment target). This is in fact a very realistic assumption, as most national central banks had an employment or an output target and as the above-mentioned Article 105 (1) of the Treaty contains the qualification that the ESCB should support the general economic policies in the Community "without prejudice to the objective of price stability."[1])

3.2 Central Banks with Real Targets

At this point, let us return to the ceteris paribus case in which the establishment of a monetary union is linked exclusively to a change in monetary policy institutions, while the economic structure remains constant. Moreover, let us assume at the outset that the relative weight of the monetary policy reaction function remains unchanged, so that $\beta_H^p = \beta_F^p = \beta_{MU}^p$ and $\beta_H^u = \beta_F^u = \beta_{MU}^u$. If the central elasticities are compared, it becomes clear that monetary union entry leaves Z_H and Z_F unchanged, whereas λ_H and λ_F increase (compare (23) and (24)). However, this means that – in contrast to the conventional argumentation – the structural unemployment rates in the monetary union will *decline* in this case.

What produces this result? It may best be explained by continuing the train of conventional thought. In a monetary union, price index developments in a single country have less of a direct influence on central bank decision-making, as they are reflected only in the average development of the aggregate price index. This reduced impact could entail excessive wage demands, higher inflationary pressure, a more restrictive monetary policy, and eventually higher unemployment. As stated above, though, the weight of the individual national prices need not change in the new average price index; in such a case, the anticipated negative consequences would not arise. On the other hand, as this study emphasizes, the common central bank pays less attention not only to the development of national price levels, but also to the development of national unemployment rates. While before the formation of a monetary union, national central banks may have been more accommodating (depending on the size of β_c^u) to counteract rises in national unemployment, the common central bank will react less to national developments. Forward-looking unions should anticipate this circumstance, however, and should pursue a more employment-friendly

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1   In fact, most of the studies on this topic assume a loss function consisting of a price stability target and a real target.

policy from the outset. Therefore, in the end the reaction depends on the distribution of the relative weights of β_H^u and β_H^p, β_F^u and β_F^p and of β_{MU}^u and β_{MU}^p. Thus assuming $\beta_H^p = \beta_F^p = \beta_{MU}^p$, for the reasons stated above the accommodation of price developments does not have an impact on unemployment that is linked to the change in the monetary policy regime. As the common central bank reacts less to a rise in national unemployment (only γ % compared to the period preceding monetary union; compare (10) versus (12) and (21) versus (23)), the central bank's "degree of activism" and the degree of central bank activism as perceived by the unions diminish overall.[1] This reduced activism, in turn, boosts perceived labor demand elasticity, which lowers the equilibrium unemployment rate.

Of course, these results were derived in a specific model framework and under specific assumptions. They are likely to change if a different foreign trade structure is assumed or if monetary policy is introduced not as rule based, but rather as determined by optimal discretionary behavior. At the same time, this study provides noteworthy proof that under certain (not implausible) conditions the change of monetary policy regime has effects that are completely different from the conventionally argued and derived effects.

4 Conclusions

This study presented a two-country model suited to analyzing the possible effects of EMU on European labor markets. The analysis concentrated on the immediate impact of a monetary policy regime change, as such a change is assumed to have the greatest direct effects. This does not imply, however, that changes in the economic and institutional environment are considered improbable or unimportant. On the contrary, it may be assumed that such changes have stronger effects on European labor markets than changes in the monetary regime alone. As shown, the often heard assumption that EMU will modify the strategic interaction between the main institutional actors and will hence trigger more aggressive wage-setting behavior and higher unemployment is only partly correct. Changing the assumptions about the openness of economies and central bank targets leads to results that contradict the conventional wisdom. The change in the monetary regime could then have a less negative – and under certain conditions even a positive – impact on the development of European unemployment.

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[1] *The comparison of (21) and (23) shows that the central bank reacts to a rise in p_H (which is the variable the domestic unions perceive) by expanding money supply by only $\frac{\gamma\beta^p + \gamma\beta^u}{1+\beta^u}$ rather than $\frac{\gamma\beta^p + \beta^u}{1+\beta^u}$.*

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The Role of Wage Policies
in a Monetary Union

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1 Introduction

January 1, 2002 marked the end of an era in Europe, when the euro area countries replaced their national currencies by euro banknotes and coins. While the launch of euro cash was certainly a unique and highly symbolic event, the date of much greater economic relevance was January 1, 1999, the start of Stage Three of Economic and Monetary Union (EMU). Then, the euro was introduced for noncash transactions.

EMU has a range of both economic and political implications for Europe. The introduction of the common currency and the transfer of economic decision making power it involved have also changed the political environment. After all, the launch of the euro fundamentally transformed the European economic framework, turning a group of relatively small economies with often fairly strong external sectors into a large single market.

The monetary policy environment is the area that changed most dramatically. The European Central Bank (ECB) took over the responsibility for monetary policy in the euro area from the national central banks. Consequently, the latter's mandates changed substantially. The Maastricht Treaty, and even more so the Stability and Growth Pact agreed upon in Dublin in 1996, narrowed the scope of action for national fiscal policymakers, although fiscal policy powers in fact remained in the hands of the national governments. As the Stability and Growth Pact lays down ceilings on deficits, the Member States nevertheless had to give up some autonomy in this area.

The conditions under which employers' and employees' representatives negotiate wage deals have also changed. With the future orientation of wage policies not featuring in the Maastricht Treaty or in the Stability and Growth Pact, it can be assumed that the Member States are meant to continue to develop and implement wage policies at the national level. However, considering that in a monetary union, inflation rate dispersion is limited, it is questionable whether different national wage policies really make sense. Would not a common currency instead call for a common wage policy? Moreover, it is not only wage policies as such, but also social security systems and the issue of nonwage labor costs that need coordination.

Given the loss of sovereign power over a national currency and one singly inflation target for all Member States, inflation dispersion across countries within a monetary union will be limited.[3]) To maintain regional competitiveness, wage policy will have to take into account not only the projected productivity gains at home, but also the growth of unit labor costs in all the other Member States. In the absence of inflation differentials and of the possibility of exchange rate adjustments, which formerly acted as buffers, wage policy responses in the monetary union have to be swifter. Negative implications of wage policies disregarding the price stability objective, i.e. rising unemploy-

ment, do not materialize with a significant time lag (like in a national monetary framework, where a higher inflation rate is possibly tolerated for a certain period and later followed by a policy tightening) but immediately and in the form of declining competitiveness. Hence, there is mounting pressure for a quick adjustment to exogenous shocks.

This is a major difference to a flexible exchange rate regime, in which a national economy whose price competitiveness lags behind its trading partners' because, for instance, wage setting tends to push up inflation can maintain its competitiveness – at least temporarily – by devaluing its currency. Also, the national central banks can set separate inflation targets. This implies that in a stylized Phillips curve context as depicted in chart 1 countries with different target inflation rates (e.g.) $\hat{p}_A, \hat{p}_B, \hat{p}_C$ and different wage policy reaction functions (different Phillips curves, e.g. A, B, C in chart 1) can have the same unemployment rate $\bar{U}$.[1]) If these countries agree on a fixed exchange rate regime or join together in a monetary union with a common target inflation rate, e.g. $\hat{p}_A$, the evolution of unemployment in the individual countries will depend on whether wage setting – i.e. the respective Phillips curve – moves towards the country which as stability anchor sets the target inflation rate in this system (e.g. curve A with the target inflation rate $\hat{p}_A$). In this case, the relationship between unemployment and inflation would be the same in all the countries involved. If, however, there are no changes in the Phillips curves, the inflation rates will only converge if unemployment runs at different levels $\bar{U}, U_1, U_2$ in the individual countries.

The question arises whether monetary union can become a long-term success if inflation rate convergence may be achieved solely through varying unemployment rates across countries. Obviously, in the short term, different unemployment levels throughout a single monetary area are a possible scenario. If real convergence remains unattainable in the long run or if new adverse supply shocks drive the labor markets even further apart, though, it can be expected that there will be calls for transfers, which, in turn, may spark political instability within monetary union. Thus, the question whether the countries which have introduced the euro will achieve not only nominal convergence (of inflation rates) but also real convergence (of unemployment rates at homogeneous inflation rates) and hence similar degrees of labor market flexibility as illustrated by the Phillips curve[2]) will be key to EMU's long-term success.

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1   *The discussion is based on the assumption that there is a longer-term negative relation between unemployment and inflation. At least for Germany, empirical findings point in this direction (see Fritsche and Gottschalk, 2002). Strictly speaking, the non-accelerating-inflation unemployment rate (NAIRU) does not set a binding lower limit on unemployment in this context. Rather, the target inflation rate set by the central bank determines the equilibrium unemployment rate. If, however, the central bank's target inflation rates decrease and the inflation rates targeted by labor market actors remain unchanged, unemployment will go up.*

2   *See also Pissarides (1996), Grubb, Jackman and Layard (1983), Hofmann (1993), Layard, Nickel and Jackman (1991), Luz and Pinheiro (1994) and Rogerson (1997).*

2 Wages, Productivity, and Prices

There is hardly an issue in economics as controversial as the question of the "right" wage developments or the question of wage flexibility; yet, the definition of wages in this context often remains unclear. In the textbooks, the answer is obvious. But since wage bargaining is about nominal wages, it is impossible to calculate ex ante the growth rate of real wages in a reliable fashion. After all, once all adjustment processes in the economy have been completed and prices on the goods markets have emerged, is it possible to determine real wages. Therefore, nominal wage policies require certain reference values. The essential real anchor is productivity growth, and the nominal anchor is the central bank's inflation target. If nominal wages rise with the sum of these two values, i.e. real wages grow at the same pace as productivity, supply and demand in the goods markets will increase along similar lines, the wage share will remain constant and there will be neither inflationary nor deflationary trends. The more closely wage policies stick to this path, the less possible it is to ascribe higher unemployment rates to generous wage settlements. Plus, the more swiftly they counter undesirable trends – in whichever direction – and restore the original wage share, the more swiftly the basis is laid for unemployment reduction.

This rule of productivity-oriented wage setting applies when ex post inflation and productivity growth are consistent with the ex ante anticipated values. Changes in macroeconomic conditions would require an immediate response if wage policy were strictly productivity-oriented. In this case, the current inflation rate and – owing to the analogous adjustment of real wages – unemployment would remain unaffected.

Yet, wage policy can adequately respond only to foreseeable changes. If sudden shocks occur, by contrast, ex post inflation and productivity will deviate from ex ante projections and the unemployment rate will change. A negative supply shock like a decline in productivity or an oil price shock will accelerate inflation unless nominal wages go down to the same extent. Still, this does not necessarily imply that unemployment rises. If nominal wages remain broadly unchanged, prices will increase at a faster pace than nominal wages. Real wages will decrease, and unemployment will remain unchanged. The new equilibrium path is characterized only by a higher price level. If, however, the central bank does not tolerate the acceleration of inflation, responding by adopting a tightening bias, unemployment will start to rise. If wage setters respond to an increase in joblessness immediately by exercising wage restraint, there will be a rapid decrease in inflation and the central bank will be able to return to a more relaxed monetary stance. In this case, nominal inertia delays the adjustment to the desired low inflation rate.

Therefore, wage policy solely guided by productivity will not suffice to avert persistently high unemployment rates. Misperceptions of future productivity trends and lags also require that unemployment, which in fact is an indicator of undesirable trends, be taken into consideration. If joblessness increases as a result of unexpected (adverse) nominal or real shocks and exceeds the equilibrium unemployment rate, a swift wage policy response is necessary. Once unemployment is on the decline, wage policy can help bring down inflation through continuous wage moderation. Subsequently, the central bank is able to

maintain its relaxed monetary stance and to accelerate unemployment reduction until the equilibrium unemployment rate is restored. To avoid hysteresis effects, wage policy should, however, respond asymmetrically to changes in the jobless rate; in other words, rising unemployment requires quick responses, falling unemployment lagged responses. The same applies more or less to increasing and decreasing inflation. If, for instance, a hike in value-added tax causes a short-term acceleration in price growth, nominal inertia can prevent the one-off price level jump from turning into a sustained increase in the inflation rate. Should the central bank's inflation target change, however, as observed in many European countries in the course of the 1980s, nominal inertia slows down adjustment, and costs – i.e. unemployment rates – rise.[1])

3 Progress in Nominal Convergence

Since the early 1980s, European economic policies have been focused on achieving nominal convergence. From the beginning, this implied far-reaching changes in the scope of action of economic policymakers in the countries preparing for participate in the Third Stage of EMU. The mere anticipation of more limited room for maneuver for wage policies had nominal wage growth rates in the EU Member States converge from the mid-1980s onwards. This was quite a change from the mid-1970s, when in western Europe, monetary and wage policy responses to rising import prices following the oil price shock differed widely from country to country, leading to diverging inflation trends (chart 2). While some economies returned to a stability-oriented path immediately afterwards, inflation continued to run high in other countries. The standard deviations depicted in chart 3 illustrate how inflation rates varied in the aspirant EMU entrants. In the countries committed to price stability – Germany, Austria, the Netherlands and Belgium – the inflation rates differed only slightly after the surge in oil prices and reconverged soon afterwards. During this period, Germany recorded the lowest inflation rates among European Monetary System (EMS) participants. The relatively stable exchange rates of these countries mirrored this development. However, if we take into account inflation rates varied widely in the 1970s, which was also illustrated by the marked fluctuations in currency relations.

The early 1980s saw a sharp trend reversal. While inflation again gathered pace in the wake of another oil price hike, it decelerated from 1985 onwards given a restrictive monetary policy and increasing orientation on Germany's focus on stability. Thus, inflation rates started to converge throughout Europe, which resulted in declining inflation rate dispersion. With the introduction of the single currency drawing near, these trends continued throughout the 1990s. Right before the start of the Third Stage of EMU, inflation rates across EU Member States hardly varied at all.

Two groups of countries emerged during this process of nominal convergence: One group – Germany, Austria, the Netherlands and Belgium – showed similar developments of inflation and unemployment and the exchange rates were broadly stable. The other – significantly larger – group of countries surveyed was very different from the first group. The countries of the first

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1   *See Horn, Scheremet and Zwiener (1999).*

group will from now on be referred to as hard currency countries and the members of the second group as soft currency countries, even though these concepts no longer apply, given the nominal convergence of inflation rates in the 1990s.

4 Lack of Real Convergence

Unemployment rates did not converge in the same way as inflation rates but there were also some differences between hard and soft currency countries (charts 4 and 5). As the surge in oil prices in the mid-1970s drove up unemployment rates in the industrialized countries, the dispersion of unemployment rates across Europe became greater. While jobless rates again converged in the hard currency countries in the course of the 1980s, unemployment dispersion across all countries remained largely unchanged over the same period. Unemployment rates again started to converge to some extent only in the course of the global economic expansion of the late 1980s. But this trend was short lived, and the recession of the early 1990s caused another increase in dispersion. It should be added, though, that the 1990s saw unemployment rates diverge increasingly also in the countries which had fared well in terms of inflation and joblessness in the previous two decades. This can be attributed chiefly to the sharp upturn in unemployment in Germany, regardless of whether analyses cover the figures of unified Germany or West Germany only. At present, Germany still has a low inflation rate, whereas unemployment has picked up. In the late 1990s, the dispersion of unemployment rates was at about the same level in the hard currency countries and in the soft currency countries.

Against this backdrop, the question arises whether and to what extent European labor markets have in fact converged or whether we now face a scenario (see stylized chart 1) characterized by similar inflation and diverging unemployment rates. Unemployment went up particularly markedly in the former soft currency countries, such as Italy, France, Spain, Ireland and Great Britain, in the 1980s, when in the run-up to European integration the target inflation rates were adjusted to the level prevailing in the hard currency countries. Yet, it took labor market actors longer than expected to adjust their policies to the low target inflation rate, i.e. the Phillips curve shifted inwards only slowly. Ireland and Great Britain represent an exception, having succeeded in bringing down unemployment and inflation in the 1990s. It seems that in these two cases the Phillips curve had markedly shifted inwards.

The fact that in the run-up to monetary union inflation converged whereas there was still a great and increasing dispersion of unemployment rates implies that wage policies in Europe continue to lack a common direction. The convergence of inflation is partly traceable to the sheer pressure generated by high jobless rates. Real convergence of wage formation would be present only if price growth showed similar patterns across countries also while unemployment rates were on the decline or, ultimately, at equal levels. If there were no convergence of wage flexibility as suggested by the Phillips curve theory, the individual countries could record similarly low growth rates for unit labor costs and, consequently, similar inflation rates, but at the same time unemployment rates would continue to diverge.

This would not have a negative impact on price stability in the euro area, but there would certainly be political implications, especially if unemployment rates continued to diverge after negative disturbances. Therefore convergence of the development of both prices (unit labor costs) and unemployment is a prerequisite required for a true alignment of wage formation processes.

Econometric tests confirm these rather descriptive results. Horn, Scheremet and Zwiener (1999)[1]) found major differences in wage formation in the countries surveyed. These differences did not become significantly smaller in the run-up to EMU. Although unemployment dampened wage growth in all countries, the degree of responsiveness varied widely. The differences were even more pronounced in terms of reference to long-term productivity and responsiveness to changing inflation rates.

The divergent developments of prices and unemployment rates mirror the differences in wage responsiveness across countries. Countries, such as Germany, Austria, the Netherlands and Portugal, brought down their inflation rates while preventing unemployment from soaring much more quickly than, for instance, France, Italy and Spain. Moreover, the 1970s and early 1980s saw broadly stable exchange rates among the then hard currency countries.

5 Differences Persist

Charts 6 and 7 show the unemployment and inflation (HICP) rates as well as the corresponding standard deviations since 1991 in more detail, providing a clearer picture of the developments after the start of EMU. We can see that the convergence of inflation rates goes hand in hand with the absolute decline of inflation in the euro area countries. In other words, the inflation rates converged towards the low inflation target of the hard currency countries and not towards the average inflation rates of all countries. The aspirant EMU countries sought to drive down inflation to fulfill the criteria for introducing the euro. Inflation in the euro area reached a low exactly at the time of the introduction of the euro on January 1, 1999. Inflation dispersion, by contrast, continued to decrease until the end of 1999. With rising oil prices, both the level and the dispersion of inflation rates increased between early 2000 and summer 2001. This alone, however, cannot be taken as evidence that the national economies in the euro area respond in a different way to the same shocks. In some countries, a tight labor market additionally pushed up inflation further.

If a common Phillips curve context applied to all economies in the European Union, there should be a negative and more or less monotonous relationship between unemployment and inflation. Hence, countries with high jobless rates should post low inflation rates and vice versa. Yet, there is no – at least graphic – evidence for such a ranking on a stylized common Phillips curve. By contrast, in the course of the 1990s, four groups of countries which displayed similar relationships between unemployment and inflation rates emerged (table 1).

Low unemployment, yet high inflation rates (the upper left-hand part of a stylized Phillips curve) can be observed in the group comprising the Netherlands, Ireland and Portugal. The continued economic expansion in the past few

1   The countries surveyed are Germany, Austria, the Netherlands, Belgium, France, Italy, Portugal and Spain, as well as Great Britain, Denmark and Sweden.

years had created bottlenecks on the labor market and accelerated wage growth and hence inflation. Germany, Belgium, France, Finland and Italy reported an inverse relationship, with unemployment running high and wage growing at a modest pace coupled with low inflation (lower right-hand part). The countries of these two groups seem to share the same Phillips curve pattern (e.g. curve B in chart 1) and thus obviously have the same degree of wage flexibility.

By contrast, Luxembourg, Austria, Denmark, Sweden and Great Britain posted both lower unemployment and inflation rates. Even the marked decline in joblessness and occasional labor shortages did not drive up inflation in these countries. Compared to the first group of countries, here the Phillips curve is apparently located closer to the origin of the diagram of unemployment and inflation rates (e.g. curve A in chart 1). Wage flexibility would thus be higher. It seems as if especially for Great Britain the Phillips curve had considerably shifted inwards.

The opposite was found for Greece and Spain, both of which recorded high inflation and high unemployment rates compared to the other countries (e.g. curve C in chart 1). Though both countries had already made huge progress in increasing wage flexibility, they still did not manage to catch up with the others. This might make it more difficult to bring down unemployment. In these countries falling, but still above-average jobless rates result in early wage increases that are far higher than productivity growth rates. The resulting acceleration of price growth dampens competitiveness and discourages unemployment reduction to levels at or even below the average.

6 Concluding Remarks

Compared to the 1980s and the early 1990s, Europe has made great progress in terms of nominal and — at least partly — real convergence over the past few years. To keep the process going, it seems to make sense for the euro area countries to step up cooperation in wage policies further. This does not, however, imply that in the future wage bargaining will take place at the European level and that wages will grow at the same pace in all Member States. After all, the dynamics of productivity still vary widely from country to country. Obviously, wage growth in countries with higher productivity growth rates should continue to be higher than in other countries. A common wage policy strategy, however, does in fact seem reasonable. The Doorn initiative is a first step in this direction.[1]) The members of this initiative propose that in all countries wage growth be linked to productivity gains and a price component. Such an approach would give catching-up countries the chance to tolerate relatively high wage gains and help adjust employees' real incomes in these countries to the European level. Also, it would prevent inflationary risks from developing, as, ideally, unit labor costs do not exceed the ECB's inflation target; hence, there is no pass-through of wage growth to inflation.

Over the past few years, most countries have pursued wage policies that are broadly in line with this conception. Unit labor costs in the euro area have remained largely stable. Monetary policymakers should draw on this contribution employers' and employees' organizations have made to price stability and

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1 An initiative of the Belgian, Dutch and German trade union federations.

adopt a more relaxed monetary stance to create the necessary dynamics and reduce unemployment further. At present, the ECB is much too strongly committed to the NAIRU theory, maintaining that the high level of unemployment is structurally inherent since the estimated NAIRU is very close to the current unemployment rate. However, linking monetary policy decisions to a reference value like the non-accelerating inflation rate of unemployment entails substantial empirical problems.

Based on econometric calculations, the NAIRU usually follows behind the actual unemployment rate, resembling a moving average of the actual jobless rate (for estimates of a time-variable NAIRU, see for instance Franz (2000)). A central bank that strictly adheres to this strategy tends to be too restrictive, since an adverse shock also drives up the NAIRU after some time and the central bank starts to tighten its stance too early when the jobless rate is on the decline. Unemployment seems to become entrenched. Also, the target inflation rate of "below 2%" seems to be too ambitious; it is even lower than the German Bundesbank's inflation target, which used to be the stability anchor in the European Monetary System prior to monetary union. Thus, it will not suffice that the Phillips curves in the former soft currency countries shift towards those of the hard currency countries, but the Phillips curves of all countries have to move inwards. Particularly large adjustments will be required in those countries that currently report relatively high inflation rates and high unemployment rates.

The transfer of monetary decision-making power upon the introduction of the euro also has implications for the coordination of wage and monetary policies. While before EMU, wage and monetary policies interacted at the national level, this interaction is now at work at the European level. Admittedly, it is only natural that within a monetary union, such a change takes place, and at first glance it does not seem to involve major problems; however, a closer look reveals that it may hamper the smooth interplay of the various economic policy actors.

The introduction of the single currency and the establishment of the European Central Bank weakened the coordination between wage and monetary policymakers. This is due to the fact that despite the degree of real convergence that has already been achieved, wage bargaining systems still vary sharply across European countries. Therefore, wage policymakers also send out different signals. Moreover, the heterogeneous composition of the Governing Council of the ECB does not make coordination easier. The members of the Governing Council are familiar with the wage bargaining systems in their own countries, but interpreting the signals from other countries is an entirely different matter. Also, some members could be tempted to refer to the familiar national indicators rather than to the European indicators. In this case, European monetary policy would focus on national economies rather than on the European average.

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Annex

Chart 1

Differing Unemployment Rates

in the Phillips Curve Context
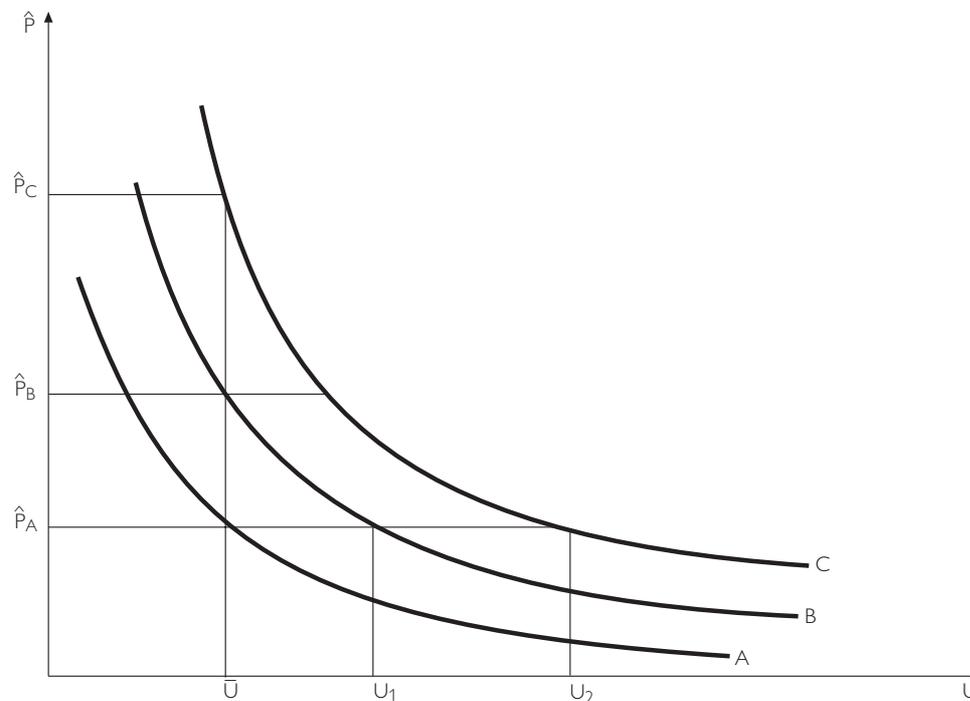
Chart 2

Inflation Trends in Selected European Countries

Hard Currency Countries

Annual change in consumer prices in %

Legend:
- Austria
- Germany¹)
- Belgium
- Netherlands

Soft Currency Countries

Annual change in consumer prices in %

Legend:
- Germany¹)
- Italy
- Spain
- Portugal
- France
- Greece

Soft Currency Countries

Annual change in consumer prices in %

Legend:
- Germany¹)
- Sweden
- Denmark
- Finland
- United Kingdom
- Ireland
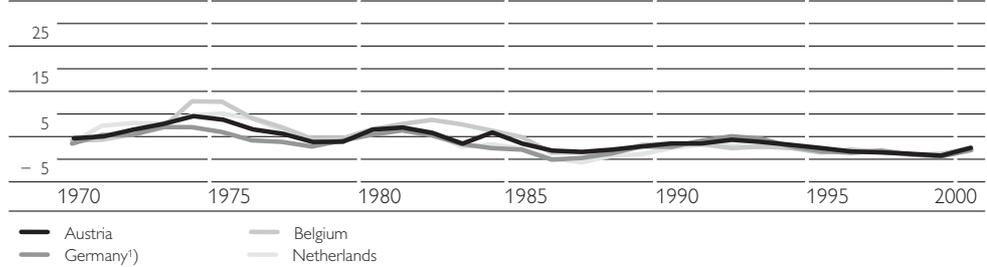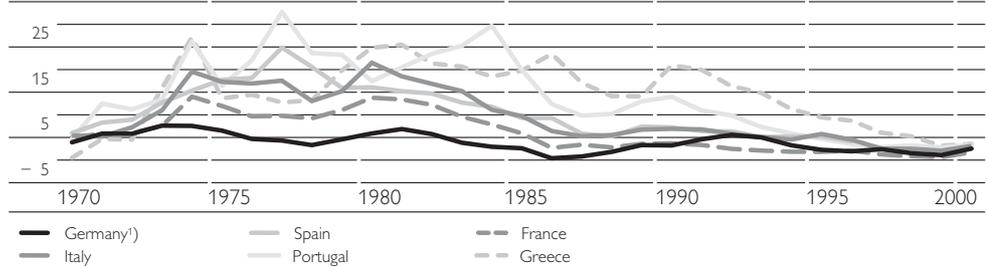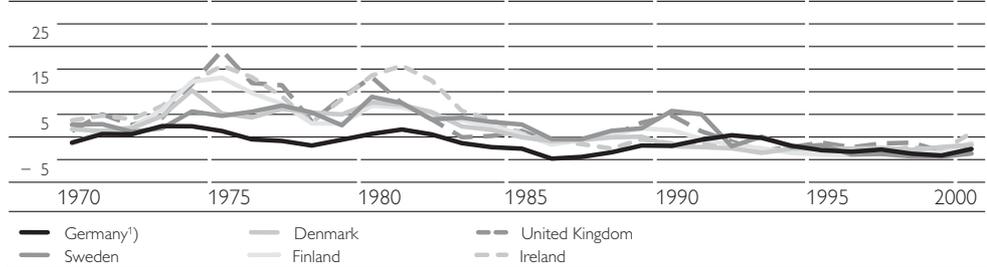
Source: OECD, Economic Outlook Database, own calculations.
¹) Up to 1990: West Germany.

Chart 3

Inflation Rate Dispersion in Europe
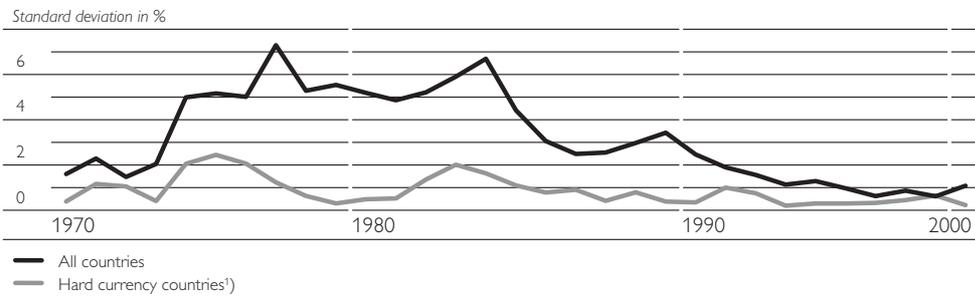
Standard deviation in %

- All countries
- Hard currency countries[1])

Source: OECD, Economic Outlook Database, own calculations.
[1]) Up to 1990: West Germany.

Chart 4

Unemployment Rates in Selected European Countries

Hard Currency Countries

OECD standardized rate, in % of the labor force

Austria — Belgium
Germany[1]) — Netherlands

Soft Currency Countries

OECD standardized rate, in % of the labor force

Germany[1]) — Spain — France
Italy — Portugal — Greece

Soft Currency Countries

OECD standardized rate, in % of the labor force

Germany[1]) — Denmark — Finland
Sweden — Ireland — United Kingdom
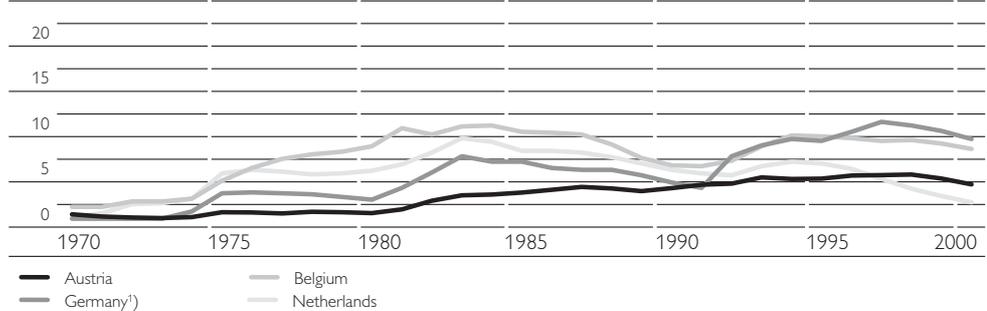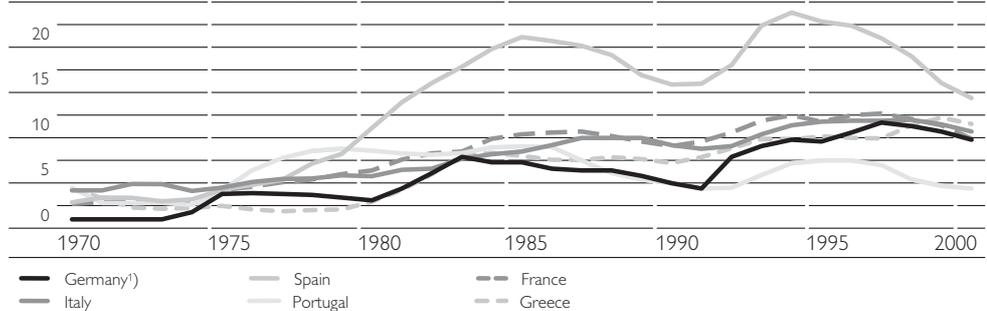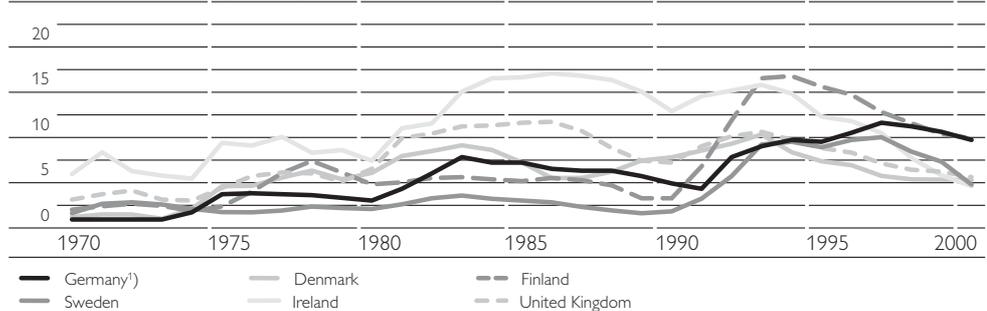
Source: OECD, Economic Outlook Database, own calculations.
[1]) Up to 1990: West Germany.

Chart 5

Unemployment Rate Dispersion in Europe

Standard deviation in %

— All countries
— Hard currency countries[1])
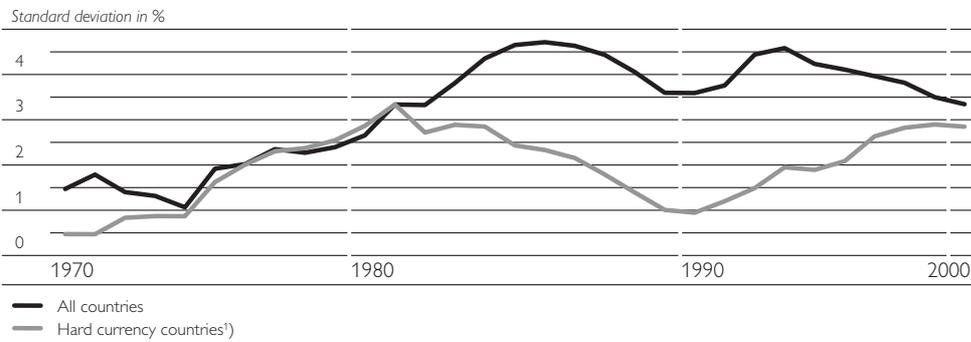
Source: OECD, Economic Outlook Database, own calculations.
[1]) *Up to 1990: West Germany.*

Chart 6

Harmonized Index of Consumer Prices (HICP) in the Euro Area

Annual growth rate and standard deviation in %

— HICP
— Standard deviation[1])
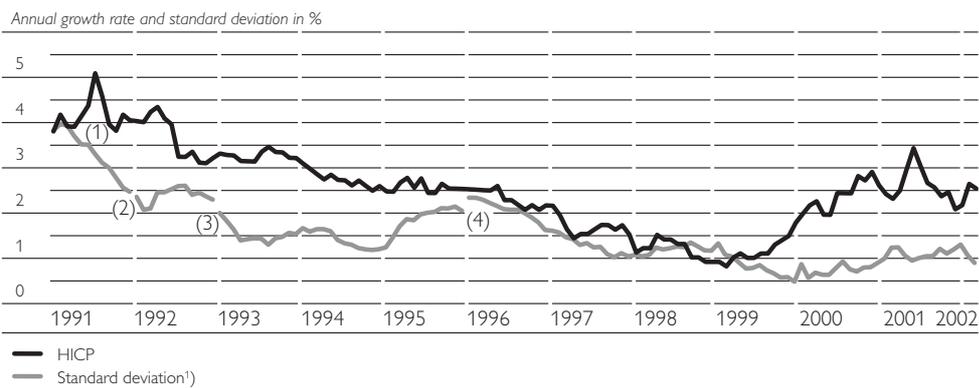
Source: OECD, Economic Outlook Database, own calculations.
[1]) *Since the national data are not available for all countries over the entire period under review, the standard deviations were calculated for different groups of countries. Period (1) comprises Denmark, Finland, France, Italy, the Netherlands, Austria, Portugal, period (2) also Belgium, period (3) also Spain, and period (4) also Germany, Greece, Ireland, Luxembourg. The different composition of groups does not alter the basic findings as regards convergence.*

Chart 7

Unemployment Rates in the Euro Area

Standardized rate and standard deviation

- —— Unemployment rate[1])
- —— Standard deviation[2])

Source: EUROSTAT, own calculations.
[1]) Standardized rate in the euro area, in % of the labor force (right axis).
[2]) % (left axis).
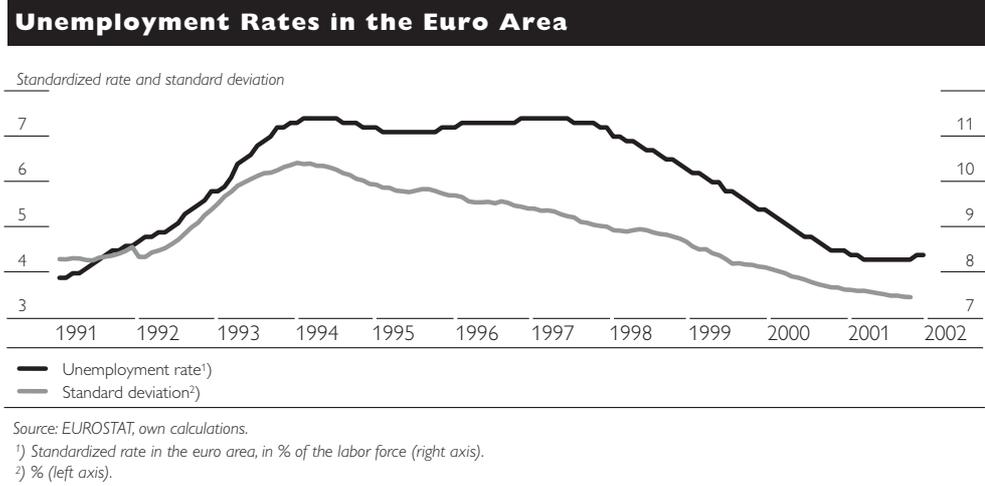
Table 1

Inflation Rates and Unemployment

in Selected European Countries (annual average 2001)

	Unemploy-ment rate[1])	HICP[2])		Unemploy-ment rate[1])	HICP[2])
High inflation, low unemployment			**High inflation, high unemployment**		
Netherlands	2.4	5.1	Greece	10.0	3.7
Ireland	3.8	4.0	Spain	13.0	3.2
Portugal	4.1	4.4			
Low inflation, low unemployment			**Low inflation, high unemployment**		
Luxembourg	2.4	2.4	Germany	7.9	2.4
Austria	3.6	2.3	Belgium	6.6	2.4
Denmark	4.3	2.3	France	8.6	1.8
Sweden	5.1	2.7	Finland	9.1	2.7
United Kingdom	5.0	1.2	Italy	9.5	2.3
Memorandum item:					
EU-12	8.3	2.5	EU-15	7.6	2.3

Source: EUROSTAT, ECB.
[1]) Standardized unemployment rate in %.
[2]) Annual growth in %.

STUDIES

Identification of Wage Rigidities in Microdata – a Critical Literature Review

Alfred Stiglbauer

1 Introduction

In the neoclassical general equilibrium model, total wage and price flexibility provides for optimal resource allocation and for full employment of the production factor labor. By contrast, rigidities, i.e. a lack of wage and price flexibility, play a decisive role in Keynesian and neo-Keynesian macroeconomic theory. Wage rigidities are one of the causes of involuntary unemployment as they may push up real wages relative to the labor market equilibrium. A number of economists accept the existence of rigidities, and a great many theoretical models have been developed to shed light on their emergence. Empirical verification was for a long time limited to aggregate wage data, and research concentrated on the cyclical reaction or persistence of such data. While considered very important theoretically, direct empirical identification was not attempted until recently. Since the mid-1990s several papers have aimed at identifying wage stickiness by means of individual data or microdata[1]).

Economic psychologists' findings and – given the emphasis central banks place on price stability – central bankers' interest in this topic promoted this research thrust.[2]) After all, we are faced with the Keynesians' claim that nominal wage cuts do not occur, which is why wage rigidities at higher inflation rates are associated with less adverse macroeconomic effects than rigidities at price stability (e.g. Tobin, 1972). Were this hypothesis valid, it would possibly make a case for a higher inflationary target.[3]) Some economists, indeed, make recommendations along those lines.[4]) This literature review does not draw conclusions from the available research as the literature is ambiguous. Besides, little evidence has to date become available for continental European countries. Summarizing the results of the papers and outlining the methods and findings in a balanced manner seems to be enough of a challenge. To economize on space, I apply further qualifications: As is typical of the literature reviewed, I do not comment on the validity of the common explanations for wage rigidities. Furthermore, I merely touch on the issue of measurement errors. Last but not least, there will not be a discussion of wage rigidities in aggregate data.[5])

This article is structured as follows: Section 2 refers to theoretical aspects of wage rigidities and sets out definitions. Section 3 deals with properties and problems of microdata. Section 4 is dedicated to an in-depth discussion of pioneering U.S. microeconometric studies since all later research built on these approaches or modified them. A methodological introduction is then followed by a presentation of the results of McLaughlin (1994), Kahn (1997) and Card

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1 Microdata refer primarily to wage data at the individual employer level.

2 Many research projects were carried out by economists based at or supported by central banks, e.g. Lebow et al. (1995), Yates (1998), Groshen and Schweitzer (1999), McLaughlin (1999), Farès and Lemieux (2000) as well as Schweitzer (2002).

3 There are – apart from wage stickiness – a number of other arguments why central banks strive for a positive inflation rate, such as the overestimation of inflation due to measurement errors (underestimation of quality improvements), substitution effects or the possibility of (ex post) negative real interest rates (Yates, 1998).

4 Akerlof et al. (1996), for instance, peg the optimal inflation rate for the U.S. at some 3%. Holden (2002) argues in a wage setting model that at lower inflation there is a permanent tradeoff between price stability and unemployment given stronger wage rigidities on the European continent – as opposed to the United States and the United Kingdom.

5 See the literature cited in McLaughlin (1994), Farès and Lemieux (2000) as well as Schweitzer (2002) and Shea's comment on Card and Hyslop (1997).

and Hyslop (1997). These papers comprise nonparametrized analyses of wage change distributions, i.e. analyses of the skewness, symmetry and location as well as "peculiarities" in these distributions. In their 1999 paper, Altonji and Devereux, by contrast, use a parametric approach; here, rigidities are estimated by means of a wage equation. While all four papers draw on the same data, they arrive at different conclusions.[1]) Section 5 expands the literature review by discussing European papers. While up to this section only a particular type of wage rigidities is described, the rigidity concept is now extended. In addition, the question is tackled whether wage rigidities change over time. Most papers provide evidence of wage stickiness, whose macroeconomic effect seems to be small, though. The first findings for Europe give rise to the assumption that in Europe, wage rigidities have a greater effect. Section 6 provides a summary and presents an outlook.

2 Types and Causes of Wage Rigidity

As opposed to what we know from textbooks, there is not *one singular* market clearing real wage. Instead, specific labor markets come with a large number of real wages. Rigid wages are said to be the reason why the wage rates of these labor markets are insufficiently differentiated. The commonly used distinction between nominal and real rigidities gives rise to confusion. After all, wage rigidities are discussed in connection with non-market clearing (too high) real wages.[2]) If not indicated otherwise, the term nominal rigidity shall mean the following in this paper: For nominal wage changes there is a barrier at zero, i.e. nominal wage changes cannot be negative; unenacted nominal wage reductions cause a spike at zero, and the density diminishes in the negative part of the wage change distribution. This specific proposition has high empirical content and calls for corresponding empirical strategies.

This type of wage stickiness dominates the literature. According to Bewley (1999), it may be traced as far back as to a statement Malthus made in 1798. As Keynes (1936, chapter 2) remarked rather casually, wages do not fall during recessions because of a coordination problem, for workers compare their wages with the wages paid by other companies. Modern theories include implicit contract models (an "insurance" for risk-averse workers against wage fluctuations), monopolistic trade unions and adverse selection (in the presence of unobservable productivity characteristics, the best workers quit in the face of wage cuts). In a nutshell, theories abound. Blinder and Choi (1990) thus comment, *"By now economists have more theories than know what to do with it."* But what about empirical evidence?

The findings of economic psychologists and experimental economists provided an important impetus. Money illusion, loss aversion and fairness are

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1   *To economize on space, I do not discuss another U.S. study. Groshen and Schweitzer (1999) use wage data for occupational groups at the individual employer level. They account both for the benefits ("grease") of higher inflation in the wage setting process (it is easier for enterprises to differentiate real wages among occupational groups) and its cost due to expectation errors ("sand"). They conclude that the net benefit of an inflation rate of up to 5% is positive, yet marginal.*

2   *McLaughlin (1994) points out that neo-Keynesian theoretical models place much greater weight on real rigidities (e.g. models of efficiency wages and of segmented labor markets) than on nominal rigidities. Romer (2001) discusses the difference between nominal and real rigidities and provides comprehensive references.*

quoted in explaining nominal rigidity (for references see Yates, 1998, Fehr and Götte, 2000, and Howitt, 2002). Research carried out by Bewley (1999) during the U.S. recession in 1992 confirmed these results.[1] The author applied a method which was – though used in other areas of social sciences – uncommon in economics:[2] He conducted over 300 comprehensive interviews with entrepreneurs, managers and trade union leaders during the 1992 recession in the U.S., discussing with them economic models of wage setting and human resource decisions. He finds clear evidence that companies indeed hardly reduce nominal wages. The reasons provided by the interviewees give credence to the economic psychologists' propositions rather than to economic theories of wage rigidities. Nominal wage cuts have a demoralizing effect, unless workers regard them as a means to support their employer in times of duress. As a consequence, they cannot be ruled out completely. Another significant finding is that companies discharge workers rather than reduce nominal wages.

Noneconomists are likely to look for institutional factors as causes of wage rigidities. This does not necessarily contradict the theories mentioned above as institutional rules and the above factors could be mutually dependent. In addition to the effects of collective bargaining agreements, mention should be made of minimum wages. Here, the gap between continental Europe and Anglo-Saxon countries could be substantial. Importantly, Holden (2002) points out that it is easier to effect nominal wage cuts in the U.S. and the U.K. than in continental Europe, because European labor legislation prohibits nominal cuts even when collective bargaining agreements have already expired. To summarize, economic models, the findings yielded from psychological studies and company surveys as well as institutional rules make nominal rigidities plausible. It should therefore be possible to identify nominal rigidities by means of conventional empirical methods. Since aggregate data mask considerable variation in individual wages and many of the economic theories represent optimizing models of individual actors, microdata would be a more useful data source.

3 Microdata: Properties and Problems

Individual wage data most frequently stem from household surveys. This holds true, for instance, for the U.S. pioneering studies mentioned above. However, such survey data are deemed unreliable, especially regarding the level of wages, given the possibility of incorrect quoting of wages and rounding.[3] Administrative data would be more reliable in this respect. They comprise, for instance, payroll accounting data of individual large enterprises, used by some authors as an additional source for their empirical research (Altonji and Devereux, 1999, Fehr and Götte, 2000). Sometimes companies are legally obliged to disclose detailed information about their employees. Nickell and Quintini (2001) as well as Schweitzer (2002) use such data for the U.K. Especially in continental

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1   See also the reviews in Howitt (2002) and McLaughlin (2001).

2   Blinder and Choi (1990) already anticipated many of Bewley's results in a similar – yet significantly smaller – study.

3   Akerlof et al. (1996) conducted a telephone survey. As stressed by Mankiw in his comment on this paper, this method is very problematic. In contrast to regular household surveys enquiring the earnings level, these authors queried the change in earnings and found little evidence of nominal wage cuts. Yet, it is known from empirical social research that respondents are reluctant to admit to unfavorable events.

Europe, social security data, as used e.g. by Beissinger and Knoppik (2001), represent a very rich source of administrative data.

In general, researchers face the difficulty of distinguishing earnings from the decisive measure, the (e.g. hourly) wage rate. These two measures may differ owing to working time variability and special one-time bonuses. Social security data often do not contain any information on the working time.[1]) Even if working time is recorded, there is still the problem that overtime, i.e. hours outside the regular working time, is usually remunerated at a higher rate. When information on working time is collected in surveys, this is an additional source of error, as (uncertain) earnings data are divided by (uncertain) working time data.

All the above-mentioned studies on rigidity examine year-on-year changes in gross wages. The authors commonly focus on "stayers," i.e. workers who do not change employers, as opposed to "movers." For practical reasons, researchers often filter out stayers from administrative data by defining as stayers all workers employed by the same employer on the sampling dates of the periods t and $t-1$.[2]) On the one hand, limiting the data source to stayers is justifiable because a change of employers frequently goes hand in hand with a change in compensation for reasons outside the focus of wage flexibility research (e.g. career advancement). On the other hand, this limitation seems to be highly problematic for reasons yet to be laid out.

The discussion of measurement error features prominently in the literature on wage stickiness. As the analysis concentrates on first differences in wages, measurement error probably plays a greater role than if the focus were on the *wage level*. Since measurement errors differ depending on the data used, this issue shall be touched upon only briefly. In the discussion, measurement errors in survey data are used as an argument both for and against wage rigidities. McLaughlin (1994), for instance, estimates that the share of observed nominal wage cuts decreases by about one third once measurement errors are considered. The data used by Smith (2000) allow for a direct control of measurement errors, since some 30% of the respondents were asked to submit an income statement. Owing to the results of this control group, the author arrives at the conclusion that the share of workers receiving constant nominal wages is considerably smaller than indicated in the raw data. She also mentions rounding and cases of intrayear polling as further reasons for the downward correction of this share. As it is often not feasible with administrative data to distinguish between earnings and wages, these data are prone to measurement errors, too; yet, Beissinger and Knoppik (2001) argue that rigidities identified on the basis of earnings data point to even more pronounced wage rigidity, since earnings data display greater variation.

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1   *In addition, social security data are often problematic as they are right-censored (at the maximum contribution base).*

2   *Sometimes the data are such that it may be determined if a stayer's job description has changed (Smith, 2000) or whether there was a period of unemployment between the two sampling dates.*

4 Pioneering Studies

The nonparametric analytical approaches to wage change distributions comprise the *skewness-location approach* (McLaughlin, 1994 and 1999), the *histogram-location approach* (Kahn, 1997) and the *symmetry approach* (Card and Hyslop, 1997). Before concentrating on these approaches, I discuss the effects of nominal rigidities on the wage change distribution as well as widely held assumptions.[1]) The parametric study drawn up by Altonji and Devereux (1999) rounds off this section.

These four pioneering studies use the same data set, namely the results of household surveys carried out in connection with the *Panel Study of Income Dynamics (PSID).*[2]) Whenever possible, the results are presented by providing answers to several questions: *1) Is there a marked absence of nominal wage cuts? 2) Is there a pronounced spike at the zero nominal wage change?* Question (1) is obvious: The more frequent nominal wage cuts, the harder it is to speak of nominal rigidity. However, if the absence of wage reductions is manifest and question (2) is clearly affirmed, this evidently points to nominal rigidity. Besides, the answer to question (2) depends on the level of inflation: At low inflation, the spike at zero should be more pronounced.[3]) Moreover, it is important to know whether *3) the effect of wage rigidities may be quantified.* Here, differing measures are used, though. It is, however, frequently estimated what share of employees is affected by unenacted wage reductions or to what extent average real wages are distorted by wage rigidity.

4.1 Optical Evidence: A Stylized Representation

Chart 1 shows the effects of nominal rigidity on the histogram of the wage change distribution. The width of the bars in the histograms equals 1 percentage point, and the bars are centered at the abscissa values. Panel (a) represents the counterfactual (hypothetical) distribution of the wage changes. For the location of the distribution, a median (which, at symmetry, equals both the mean and mode) of 6% was chosen. The expected inflation and the (average) development of labor productivity are the key determining factors of the location. Panel (b) shows the wage change distribution if nominal rigidity applies to part of the employees. Compared to (a), nominal wage cuts occur less frequently: There is thinning on the left side of the distribution, which contrasts with clustering at the bar representing null (zero bar). As the following applies to the distribution in chart 1 (b)

$$\text{mode } (0) < \text{median } (6\%) < \text{mean (over } 6\%)$$

the distribution is right-skewed and the most frequently used measure in this context, the skewness coefficient, is positive. To be precise, the skewness of the distribution increases compared to (a).

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1   This discussion builds on Beissinger and Knoppik (2001).

2   A further study, by Lebow et al. (1995), is likewise based on this data set. I cannot discuss it in more detail, however, since it is not available.

3   By contrast, the decrease of nominal wage cuts at high inflation is trivial.

It is not advisable to conclude *a priori,* on the basis of optical evidence, that rigidities exist. The optical representation of histograms, for instance, is sensitive to the choice of intervals, the bar width and the choice of the origin.[1]) Many studies on wage stickiness contain histograms displaying a sharp spike at the zero bar. It is, however, impossible to pinpoint whether this is actually due to a high share of constant nominal wages or to small changes in these wages. More importantly, little may be inferred about the existence of rigidities from the shape of the distribution. As the counterfactual distribution is unobservable, it cannot logically be ruled out that it contains the same irregularities. One possible solution involves observing wage change distributions over time and drawing conclusions from the changes for the counterfactual distribution. The skewness-location approach and the histogram approach use such variations. By contrast, under the symmetry approach, a smooth, i.e. continuous and symmetrical, distribution is assumed.

Chart 1

Stylized Representation of Downward Nominal Rigidity

(a) Nominal wage changes in the absence of rigidities

(b) Nominal rigidity

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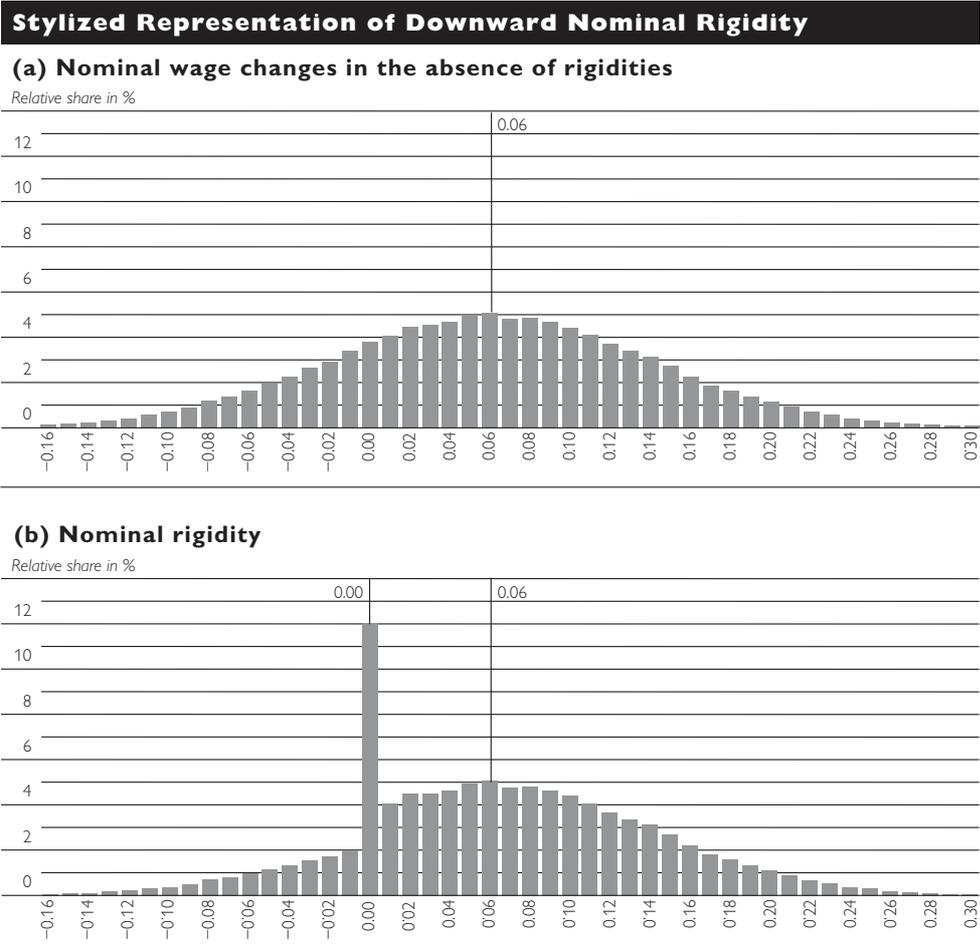
1   In a way, this also applies to density estimations, which lack some of the disadvantages of histograms, but for which the bandwidth parameter plays an equally decisive role as the bar width for histograms.

4.2 Conclusions for Counterfactual Distributions – Common Assumptions

It is useful to define a number of concepts. The term $x_t = \Delta ln w_{it}$ denotes the difference of the observed (factual) logarithmized nominal wages in t and $t-1$ and $x_t^* = \Delta ln w_{it}^*$, expresses the change in the nominal wages of the counterfactual distribution. Equation (1) shows the effects of nominal rigidities on the cumulative distribution function of wage changes. Here, F and G, respectively, denote the factual and counterfactual distributions. The difference between F and G is ascribable to a rigidity function $\rho(x)$. This function prevents a constant share $(0 < \rho < 1)$ of wage reductions (in the entire distribution left of 0).

$$F(x_t) = \begin{cases} (1-\rho_t)G(x_t) & x_t < 0 \\ G(x_t) & x_t \geq 0 \end{cases} \tag{1}$$

One assumption frequently encountered in the pioneering studies, but also in later research, is linked to the limitation to stayers: *assumption 1 (only direct effects)*. The density of wage reductions is assumed to be concentrated at zero, while there are no other effects. Indirect effects could arise from layoffs or worker turnover. Consequently, assumption 1 is problematic, since the motivation for investigating wage rigidities is their potential role in causing unemployment. The effects of this assumption are not clear, however: If, on the one hand, especially those employees are laid off whose wages may not be reduced, the spike at the zero bar decreases. By contrast, self-selection could result in a thinning at the left tail of the distribution, since employees tend to reject wage offers which are de facto wage cuts (McLaughlin, 1999).[1]

The next assumption is also universial: *assumption 2 (median high enough)*. The highest value of x influenced by rigidity, x^r, is smaller than the median of the counterfactual distribution $m^* : x_t^r < m_t^* \forall t$. Together with assumption 1 this implies that the medians of the factual and counterfactual distributions are identical and only the left tail of the wage change distribution is affected by rigidity. With nominal rigidities, this assumption is unproblematic because in the observed distributions the median is always well above zero.[2]

The skewness-location approach and the histogram-location approach use *assumption 3 (time invariance of the median-centered counterfactual distribution)*. Over time the counterfactual distributions differ only in their location: $G_t(x_t^*) = G(x_t^* - m_t^*) \forall t$. In contrast, under the symmetry approach, the counterfactual distribution is assumed to be symmetrical to the median: *assumption 4 (symmetry of the counterfactual distribution)*: $G_t(m_t^* - x^*) = 1 - G_t(m_t^* + x^*) \forall x$. The assumption most frequently encountered in papers is *assumption 5 (time invariance of the rigidity function)*: $\rho_t(x) = \rho(x) \forall x, t$. Later research discards assumption 5 and by extension considers the possibility that the intensity of wage rigidities changes over time (section 5).

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1   *Already Milton Friedman (1968, as quoted in Bewley, 1999) put forth this argument. Card and Hyslop (1997) believe that they can weaken assumption 1 by imputing that the counterfactual distribution is located somewhat more to the left of its factual counterpart.*

2   *However, if rigidities are investigated which are located above zero in the distribution examined (section 5), assumption 2 could be violated, which is also rather unlikely, though.*

4.3 Skewness-Location Approach

Nominal rigidities have a considerable impact on the shape of the wage change distribution if the median is low as shown in chart 1 panel (b): Rigidity prevents a substantial share of wage changes of the counterfactual distribution. As may be easily imagined, if the median is at a higher location, the spike at zero is smaller and thus the distribution is less skewed compared to chart 1 panel (b). The skewness-location approach connects the skewness with changes in the location of the counterfactual distribution. Interestingly, in the literature the inflation rate is considered to be the sole factor determining the location of the distribution.[1]) Nominal rigidities *ceteris paribus* imply a negative correlation of skewness and inflation.

McLaughlin (1994) introduces microdata into wage rigidity research. He discusses the variability of wage changes and is first to examine in depth the skewness of their distribution. For the period from 1976 to 1986, he identifies considerable variation in individual wage changes: 17% of the stayers on average settle for nominal wage cuts. Besides, he finds that nominal wage growth shows a spike at zero for 7% of the stayers. Further on in his analysis, he detects a slight, yet significant, positive (or right) skew. One disadvantage of McLaughlin's early paper is that he summarizes the observations of all the years under review and thus does not make use of variations in the skewness over time. In a later paper (1999), he calculates correlations between different skewness measures of the distributions of individual years and the inflation rate, but does not detect any significant negative correlation for stayers. McLaughlin concludes that there is no substantial nominal wage rigidity. The main reason he gives is the weak skewness of the wage change distribution, which he deems to be an effect of self-selection. He considers the spike at zero too small as to speak of noteworthy nominal rigidity (section 5).

The skewness-location approach has one weakness: It basically stops halfway at the identification of the counterfactual wage change distribution. As skewness statistics characterize the entire distribution as such, it is not feasible to quantify the effects of rigidity.[2]) The following two approaches, in contrast, allow for a quantification.

4.4 Histogram-Location Approach

Kahn (1997) examines the period from 1970 to 1988. Her approach uses changes in the median-centered wage change distributions to identify the counterfactual distribution. The histogram of chart 2 illustrates this: Panel (a) shows the median-centered counterfactual distribution of the wage changes, while below factual distributions for the cases of low inflation (panel (b)) and high

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1   Holden (2002) points out that higher productivity growth likewise causes the wage change distribution to shift to the right. It is correct that average productivity growth, provided it is high enough, also facilitates real wage differentiation. On the other hand, there is the argument that in times of low productivity growth (productivity slowdown) the maneuvering room for nominal wage cuts might prove to be too small. In the papers discussed here, which mostly examine very long periods, inflation is at any rate substantially more variable and thus a central factor in determining the location of the analyzed distributions.

2   What is more, some skewness measures, such as the skewness coefficient, are not really useful given their high sensitivity to observations at the edges of the distribution (Kahn, 1997). McLaughlin (1999) offers an in-depth discussion of the suitability of various skewness measures.

inflation (panel (c)) are displayed. *PC* and *PF* denote the relative frequency in the counterfactual and factual distributions, respectively.

Median-Centered Theoretical Histograms of Counterfactual and Factual Wage Change Distributions

(a) Median-centered counterfactual distribution

PC in %
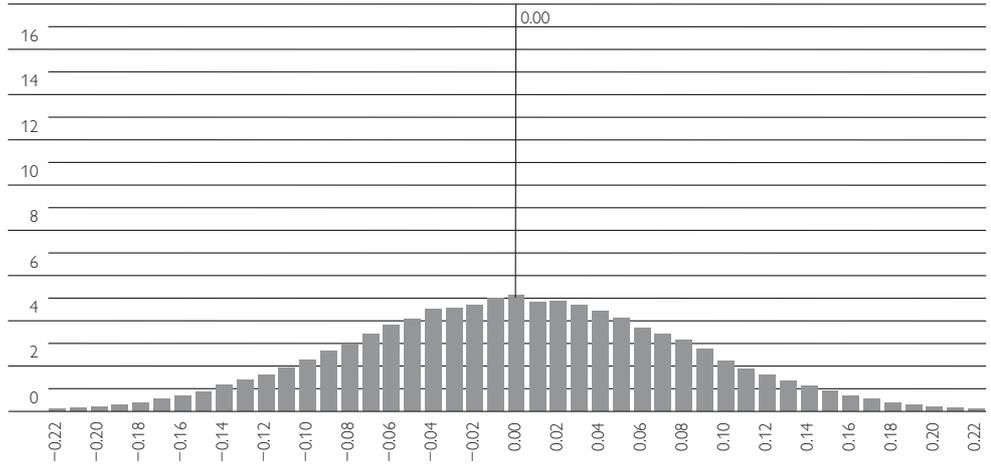
(b) Factual distribution: low inflation

PF in %
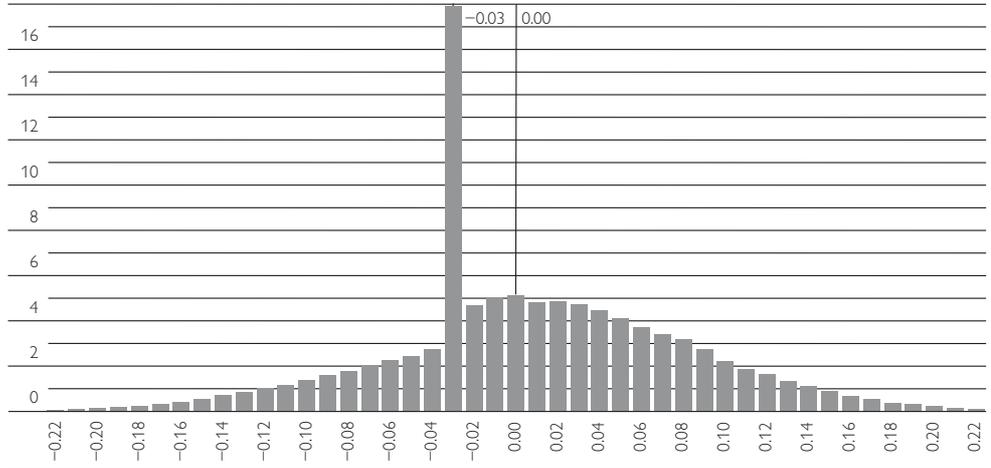
(c) Factual distribution: high inflation

PF in %
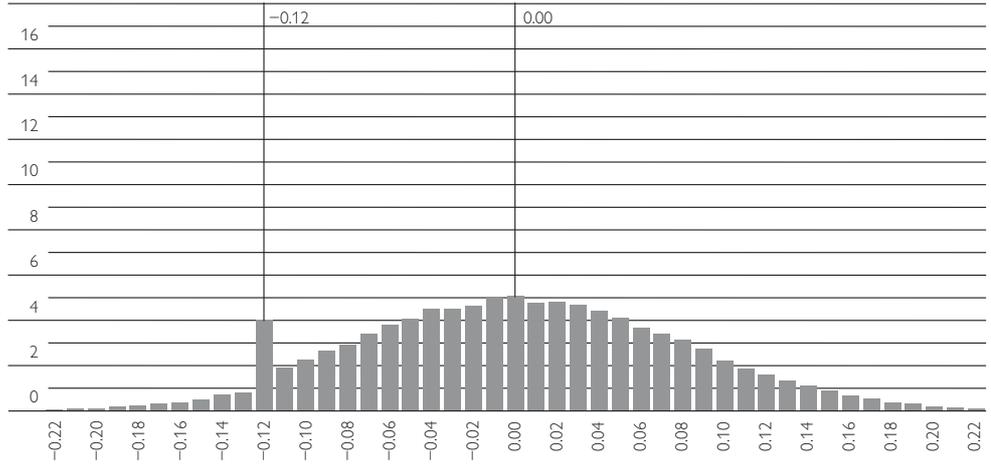
Note that in the lower parts of the chart, the spike is the farther to the left, the higher inflation. In panel (b), the spike is at –3% on the assumption of low inflation; in panel (c), at higher inflation, it is located at –12%. Once the bars left of the median are indexed with $r = 1, 2, ...$ (starting from inside), we find the following: For the bars in the range from r^{min} to r^{max}, it is possible to distinguish the counterfactual distribution from the effects produced by rigidity, with r^{max} and r^{min} the highest and lowest index figures of the zero bars in the observations made over time. If the situations shown in panel (b) and (c) correspond to the years with the lowest and highest inflation, $r^{min} = 3$ and $r^{max} = 12$ (at a bar width of 1 percentage point). To the right of r^{min}, the factual and counterfactual distributions are identical by assumption. As to the bars to the left, their size equals the counterfactual distribution and a time-dependent rigidity effect. Equation (2) provides the basis for regressions, with PC_r denoting the density unaffected by rigidities:

$$PF_{r,t} = PC_r + RIG_{r,t} + u_{r,t}. \tag{2}$$

Empirically, equation (2) is applied to each bar by introducing dummy variables, where $DNEG_{r,t}$ denotes negative bars (i.e. histogram bars to the left of the median of the original equation) and $D0_{r,t}$ the zero bar. Equation (3) is the "proportional model" of Kahn (in a simplified form). It is estimated for each of the bars in the range of $r^{min}...r^{max}$ (with t representing the time index and u the error term):

$$PF_{r,t} = \underbrace{\underbrace{\alpha_r}_{PC_r} - \underbrace{\rho \alpha_r DNEG_{r,t}}_{\text{thinning at the "negative bars"}} + \underbrace{\left(\gamma + \rho \sum_{j>r} \alpha_j DNEG_{j,t}\right) D0_{r,t}}_{\text{spike at the "zero bar"}}}_{RIG_{r,t}} + u_{r,t} \; for \; r = r^{min}...r^{max}. \tag{3}$$

We see thinning by the factor ρ in the case of a negative bar (the dummy variable $DNEG_{r,t}$ takes on the value 1). A spike occurs when the r bar equals the zero bar ($D0_{r,t} = 1$). The high frequency is captured, on the one hand, through interaction of $D0$ with the negative bar within the range of $r^{min}...r^{max}$ and, on the other, through γ (i.e. the density reduction located outside of r^{max}).

This estimation approach links questions (1) and (2) mentioned at the beginning of this section. Kahn answers them in the affirmative and quantifies the effect of nominal wage rigidity. ρ equals 0.47, which means that in the range of $r^{min}...r^{max}$ wage reductions are by 47% less frequent than suggested by their distance to the median. In the light of this estimate, the author concludes that around 9.4% of employees do not have to settle for wage changes because of nominal rigidities. Yet, these results apply to blue-collar workers only; for white-collar workers, Kahn comes up with weaker findings.

4.5 Symmetry Approach

On the assumption that the counterfactual distribution is symmetrical (assumption 4), it is possible to deduce the level of rigidity in the left part of the distribution from the mirrored right part. Card and Hyslop (1997) apply this

approach to *the PSID data set.*[1]) Using assumption 4 is problematic.[2]) It is apparently frequently violated, but it seems to be unclear how big an error this causes.[3]) The authors identify pronounced nominal wage rigidities: The depicted histograms show a clear thinning in the negative part of the distribution, and the spike at zero (up to 20% of observations) is negatively correlated with the inflation rate. In the main part of their analysis they employ density estimations to calculate the counterfactual distribution. They conclude that – depending on the year – wage cuts are prevented for between 7% and 14% of all workers. Real wage reductions are blocked more strongly in years of lower inflation. Thus, Card and Hyslop detect somewhat stronger effects than described by Kahn. They quantify the impact on average real wages as follows: If the inflation rate advances from 3% to 8%, real wage growth for stayers shrinks by 0.3%. Altogether, they consider the macroeconomic repercussions of nominal wage rigidities measureable, if modest.

4.6 Parametric Analysis of Wage Changes

The method used by Altonji and Devereux (1999) differs clearly from the papers discussed above, as their analysis is not directly based on the wage change distribution. Instead, they employ an econometric estimation approach which builds on an efficiency wage model (McLeod and Malcomson, 1993) and accounts for measurement errors:

$$\Delta lnw_{it} = \begin{cases} x_{it}b + e_{it} - lnw_{it-1} + m_{it} \text{ if } x_{it}b + e_{it} - lnw_{it-1} \geq 0 \\ m_{it} \text{ if } x_{it}b + e_{it} - lnw_{it-1} \in [-\alpha, 0] \\ x_{it}b + e_{it} - lnw_{it-1} + m_{it} + \lambda \text{ if } x_{it}b + e_{it} - lnw_{it-1} < -\alpha. \end{cases} \quad (4)$$

w_{it} again denotes the individual wage, x_{it} is a vector of explanatory variables common in wage equations, e_{it} is an error term, m_{it} represents measurement error, b is a vector of coefficients, and α and λ are constant scalars. Equation (4) may be interpreted as follows: In the absence of rigidities (first line), the wage change intended by employers is realized. If the intended nominal wage reduction is smaller than α, wages remain constant (second line), apart from measurement errors. This reflects the view that nominal wage cuts come at a cost for firms. Above a threshold α the benefit ensuing the wage reduction will, however, exceed these costs. In this case (third line), the nominal wage will be reduced, yet by λ less than intended.

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1   They also use other survey data (Current Population Survey), yet obtain similar results for both data sets.

2   Card and Hyslop justify it by pointing out that they regard assumption 3 as implausible because the dispersion of the distribution may change over time. McLaughlin (1999) likewise questions the use of assumption 3 in Kahn's work. The variance of this distribution could mount as the median increases. In such a case, thinning in the left part of the distribution would ensue also in the absence of a spike at the zero bar. McLaughlin, however, confirms Kahn's findings, using a difference-in-differences approach.

3   McLaughlin (1999), for instance, shows that the wage distribution displays considerable asymmetries in the immediate vicinity of the median, an area which should be unaffected by rigidities. Furthermore, Card and Hyslop generate the counterfactual distributions by mirroring the real wage distribution at zero. This seems to be problematic, with productivity growth another determinant of the location. The histograms contained in their paper (e.g. chart 2.1) corroborate this criticism.

Parameters α and λ may be estimated by means of a maximum likelihood approach. If both parameters differ from zero, the hypothesis of totally flexible nominal wages must be rejected. In the light of the estimation results, Altonji and Devereux arrive at this conclusion: The parameter value of α is significant, but fluctuates vividly (up to 0.43).[1]) Put differently, nominal wage reductions of up to 43% are prevented through rigidities. Given their estimation results, the authors conclude that a large part of the observed nominal wage reductions is ascribable to measurement errors. This estimation approach is interesting for a number of reasons. Parametrization facilitates the use of information about companies, employees and macroeconomic circumstances. What is more, the model allows for a more general type of nominal wage rigidities. The results are, however, very much dependent on the assumptions about the distribution of measurement errors, and this complex model runs the risk of being under-identified (Kramarz, 2001).

5 Later Studies and Extensions

5.1 First Results for Europe

Fehr and Götte (2000) apply Altonji's and Devereux's approach to Swiss data spanning the period from 1991 to 1998; in that period the inflation rate dropped to close to zero. They use both survey and social security data, and, interestingly, the two data sets yield similar results. Fehr and Götte identify large shares of nominal wage reductions (up to 30%) and a share of workers receiving constant nominal wages, which is negatively correlated with the inflation level and reaches up to 15%. Their estimation results comprise comparatively stable outcomes for the coefficient α (with values between 0.2 and 0.3; equation (4)). Besides, λ comes to about 0.1 and is significant, which means that if nominal wage cuts occur when the threshold is exceeded, they will be 10 percentage points lower than intended. These estimation results are better than the ones Altonji and Devereux arrived at in their earlier study. The authors conclude that there is considerable nominal wage rigidity present. They furthermore show that in most Swiss sectors and cantons a rise in unemployment is correlated with the frequency of unenacted wage reductions.

The survey data of the *British Household Panel Study* covering the period from 1992 to 1996 in Smith (2000) offer results which at first glance are comparable to the findings presented in the U.S. studies: Of the entire sample, 23% of workers take nominal wage cuts and 9% receive constant nominal wages. The spike at zero, however, disappears almost completely following corrections for measurement error (section 3). The author thus finds little evidence of nominal rigidity.

Nickell and Quintini (2001) use survey data which cover a long period, namely 1975 to 1999. Given the sizeable variability of inflation (between 2% and 22%) during the observation period, they can analyze the influence of different inflation rates very well. They find a relatively low share of constant nominal wages, which equals almost zero at high inflation and reaches up to 7% at low inflation. With subdued inflation, up to 22% of workers are faced with nominal wage reductions. In the analytical part, Nickell and Quintini examine

1   For λ they mostly obtain no significant result.

whether the high frequency of nominal wage changes at zero impacts the functioning of labor markets. If this were the case, the distribution of real wage changes would necessarily be affected by the inflation rate. The authors examine the share of workers taking real wage reductions for each year and regress it inter alia on the inflation rate and its change. The correlation, while significant, is moderate: An increase in the long-run inflation rate by 1 percentage point raises the number of stayers taking real wage cuts by some 1.4%. The authors believe that this does not justify lifting the inflationary target of the central bank. Like Nickell and Quintini, Schweitzer (2002) uses the company data of the *UK New Earnings Survey* covering the period from 1976 to 2000. Using variants of Kahn's approach (1997), he finds nominal rigidities confirmed. It is noteworthy that he also elaborates on real rigidities (section 5.2).

Beissinger and Knoppik (2001) analyze German social security data for the period from 1975 to 1995. Applying the skewness-location approach, they carry out regressions and identify for each of their specifications a negative and (mostly) significant correlation between the skewness and the location of the median. Using the histogram-location approach, Beissinger and Knoppik likewise detect nominal rigidities for all groups of workers. They ascertain a parameter value around 0.25 for ρ and thus estimate that for around 10% of all workers nominal wage reductions are warded off. The overall effects are somewhat more pronounced than in the U.S. Inflation targets which are too low, they argue, entail considerable costs.

The paper by Dessy (2002) is based on survey data derived from the *European Household Panel* for 13 countries and compares wage changes in 1995 and 1996. Most countries have a large share of workers with rigid nominal wages: At the median of these countries, some 17% of workers receive constant nominal wages, while 18% take wage cuts. The results for the individual countries vary greatly, however. In Germany and Belgium the share of workers receiving constant wages amounts to 30% or higher, which contrasts with below 5% in Spain and Ireland. The share of workers taking wage cuts is spread more evenly among the countries though. Yet, there is one exception, as for 1996, data are also available for Austria; here, the share of workers settling for wage cuts is almost as high as 50%, which is implausible.[1] Such results reinforce skepticism toward survey data.

5.2 Menu Costs and Real Rigidities

Other types of wage rigidity are also dealt with in the literature. A case in point are menu costs which prevent small nominal wage changes.[2] They also lead to a spike at a zero nominal wage change, yet this is coupled with a symmetrical thinning of the wage change distribution close to zero. For the stylized representation in chart 3 panel (a), nominal wage changes below 2% are assumed to be prevented by menu costs. More and more attention is now also being paid to "real" rigidities, a special type of downward nominal rigidities showing a spike at the expected inflation rate. In panel (b), the inflation rate lies at 3% and nominal

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1 *This assessment is based on preliminary analyses using Austrian social security data.*

2 *The literature does not discuss the question whether menu costs are plausible in connection with wages (this effect is traditionally addressed in the context of output prices).*

Chart 3

Other Types of Wage Rigidity

(a) Rigidity caused by menu costs

Relative share in %
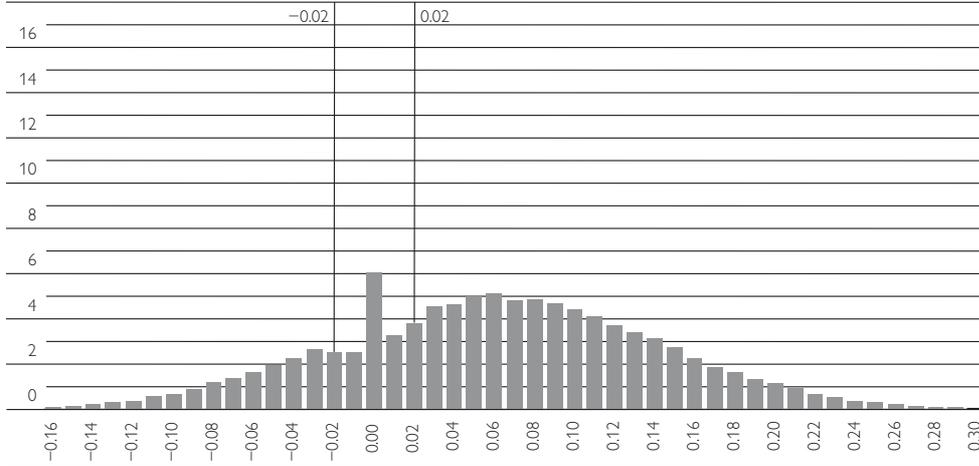
(b) Real rigidity

Relative share in %
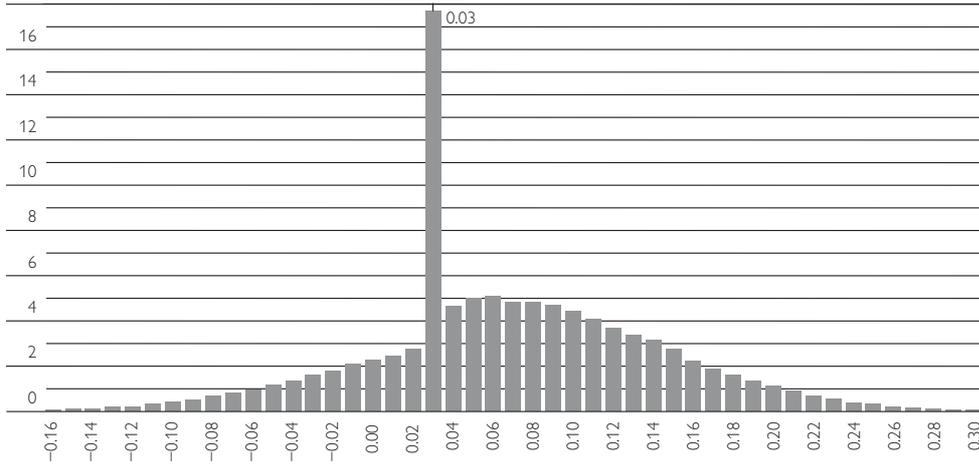
(c) Menu costs, nominal and real rigidity

Relative share in %
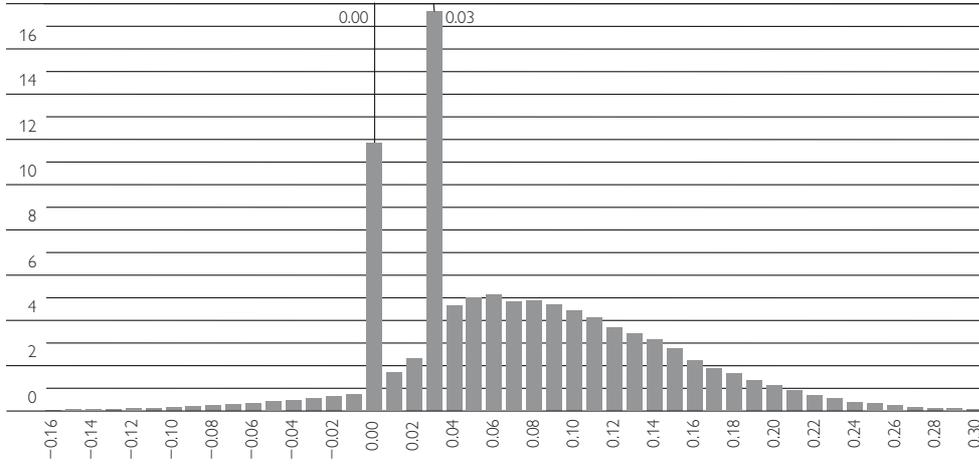
wages below this value are prevented. A spike is evident at 3%, with thinning to the left of this mark. For panel (c) all three discussed forms of wage stickiness, i.e. downward nominal rigidities, menu cost-induced rigidity and real rigidities, are assumed to be at work. They result in a more complex shape of the wage change distribution. The methods used to examine these alternative types of rigidities are basically extensions of the afore-mentioned approaches.

Menu costs are considered relatively frequently. McLaughlin (1994) investigates whether the spike at zero detected in the *PSID data* is traceable to menu costs. Given the frequency of small nominal wage changes, he rules out this explanation, however. Kahn (1997) extends equation (3) by introducing another dummy variable, which captures thinning effects slightly above zero. She finds evidence for menu costs, which, however, is smaller than that for nominal rigidity. Card and Hyslop (1997), too, pinpoint additional proof for menu costs.

By contrast, only Schweitzer (2002) has so far examined real rigidities as defined above. This is most likely due to the fact that the expected inflation is difficult to determine. Similar to the German data results presented by Beissinger and Knoppik (2001), his histograms show pronounced spikes in the positive part of the wage change distribution. Schweitzer estimates equation (3) in a modified form, which also considers spikes at the expected inflation rate in addition to spikes at zero. He resolves the difficulty of identifying the expected inflation by experimenting with different annualized inflation rates of the monthly consumer price index, which are released at critical points in the British wage-setting process. Schweitzer discovers evidence of the existence of real rigidity (as well as of menu costs).

Menu costs and real rigidities may also distort real wages and thus trigger unemployment. Yet, it is hardly possible to infer negative effects of too low inflation rates from the existence of such rigidities. While menu costs might indeed prevent nominal wage adjustments at very low inflation, real rigidities are probably unrelated to the level of inflation.

5.3 Time-Variant Rigidities

Beissinger and Knoppik (2001) abandon assumption 5 (time invariance) in their estimations. Time variance does not mean that rigidities are not equally binding at different locations of the median, but that the level of the rigidity parameter ρ is allowed to vary. In their comments on Akerlof et al. (1996), Gordon and Mankiw point out that nominal rigidities decrease as soon as the actors involved have grown used to lower inflation rates. Another factor that possibly causes rigidities to change are economic policy measures aimed at rendering labor markets more flexible (e.g. the recommendations of the OECD, 1994). Finally, the cyclical position may likewise alter rigidities, as it might be easier to implement nominal wage reductions under unfavorable macroeconomic conditions.

Beissinger and Knoppik (2001) consider time variance of ρ by incorporating the unemployment rate and its change as explanatory variables into their estimation equations. They identify a significant increase in nominal rigidity upon a change in the unemployment rate both under the skewness-location approach and the histogram-location approach. In the observation period, the nominal rigidities should thus decline rather than increase. Schweitzer (2002),

by contrast, surmises that nominal rigidity tends to grow, having applied the extended histogram-location approach to two subsamples of his data.

6 Summary and Outlook

The findings presented in the literature on nominal wage stickiness largely corroborate the existence of rigidities. Only McLaughlin (1999) and Smith (2000) deem nominal wages in the U.S. and the United Kingdom highly flexible. Kahn (1997) identifies at least partial nominal rigidities; Card and Hyslop (1997) and Altonji and Devereux (1999) find clear evidence for the U.S. Nickell and Quintini (2001) as well as Schweitzer (2002) confirm this for the U.K. Schweitzer also detects real rigidities. Furthermore, several authors identify wage rigidities ascribable to menu costs. Most authors, however, comment only vaguely on the resulting adverse macroeconomic effects.

Further research about wage rigidities is necessary for several reasons. First, frequent discussions on measurement error indicate that survey data do not lend themselves to this type of research and that preference should be given to alternative data sources. Second, further studies covering continental European countries are needed. Fehr and Götte (2000) as well as Beissinger and Knoppik (2001) find marked nominal rigidities for Switzerland and Germany. However, this evidence does not yet sufficiently cover continental Europe, where national labor markets are more strictly regulated.[1]) Regarding the role of inflation, researchers must specify the type of wage rigidity they identify, as clearly only nominal rigidity, which prevents a nominal wage reduction, may be used as an argument for a higher inflation target.

Naturally, researchers should look beyond the direct identification of rigidities. After all, even if rigidity is present, it remains uncertain whether this necessarily leads to adverse macroeconomic effects. By means of linked employer-employee data sets,[2]) recent empirical studies on labor markets show that companies may employ various exit strategies to circumvent rigidities (Kramarz, 2001). If companies want to reduce labor costs (while keeping employment constant), they may do so by replacing highly paid employees through lower-paid employees. Focusing empirical rigidity analyses on the wage change distribution of stayers should be contested. It would be advisable to broaden the focus of microeconometric research to include worker turnover and unemployment in order to analyze the macroeconomic consequences of wage rigidities.

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1   At present, an international comparison of wage rigidities for mostly European countries, including Austria, is being drawn up.

2   Data sets which in addition to information on individual employees also account for characteristics of their employers (Hamermesh, 1999). Such data may, for instance, be construed from social security data.

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Abbreviations

AMS	Arbeitsmarktservice Österreich (Austrian Public Employment Office)		GDP	Gross Domestic Product
			HICP	Harmonized Index of Consumer Prices
ARTIS	Austrian Real Time Interbank Settlement		IHS	Institut für Höhere Studien (Institute for Advanced Studies)
BWA	Bundes-Wertpapieraufsicht (Federal Securities Supervisory Authority)		IIP	International Investment Position
			IMF	International Monetary Fund
BWG	Bankwesengesetz (amendments to the Banking Act)		NACE	Nomenclature générale des Activités économiques dans les Communautés Européennes (Statistical Classification of Economic Activities)
CAD	Capital Adequacy Directive			
CEECs	Central and Eastern European Countries			
COICOP	Classification of Individual Consumption by Purpose		ÖCPA	Austrian Version of the Classification of Products by Activities
CPI	Consumer Price Index		OECD	Organisation for Economic Co-operation and Development
EC	European Community			
ECB	European Central Bank		OeKB	Oesterreichische Kontrollbank
EEA	European Economic Area		OeNB	Oesterreichische Nationalbank
EEC	European Economic Community		ÖNACE	Austrian Version of the Statistical Classification of Economic Activities
EGVG	Einführungsgesetz der Verwaltungsverfahrensgesetze (Introductory Act to the Administrative Procedure Acts)		RTGS	Real Time Gross Settlement System
			SDR	Special Drawing Right
			SNA	System of National Accounts
EMU	Economic and Monetary Union		TARGET	Trans-European Automated Real-time Gross settlement Express Transfer
EQOS	Electronic Quote and Order Driven System			
			TEU	Treaty on European Union
ERM	Exchange Rate Mechanism		WIFO	Österreichisches Institut für Wirtschaftsforschung (Austrian Institute of Economic Research)
ERP	European Recovery Program			
ESCB	European System of Central Banks			
ESNA	European System of National Accounts		WWU	Wirtschafts- und Währungsunion
EU	European Union			
Eurostat	Statistical Office of the European Communities			

Legend

– = The numerical value is zero

. . = Data not available at the reporting date

× = For technical reasons no data can be indicated

0 = A quantity which is smaller than half of the unit indicated

Ø = Mean value

_ = New series

Note: Apparent arithmetical discrepancies in the tables are due to rounding.

Official Announcements
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Please see the German-language publication "Berichte und Studien" for a list of all Official Announcements in German.

Authentic German text published in the Official Gazette (Amtsblatt zur Wiener Zeitung)	Translation published in "Reports and Summaries" and "Focus on Austria" issue no

Official Announcements
Regarding the Foreign Exchange Law (cont.)

DL 1/02 Modification of Official Announcements DL 1/91 and DL 3/91 with respect to the Foreign Exchange Act — Feb. 25, 2002 — 1/2002

DL 2/02 Amendment to Official Announcement DL 2/91; UN Security Council Resolution No. 1373 (2001) — Sept. 2, 2002 — 3/2002

Council Regulations
of the European Communities

Minimum Reserve Regulations

No 2531/98	Council Regulation (EC) concerning the application of minimum reserves by the European Central Bank	Nov. 23, 1998
No 2532/98	Council Regulation (EC) concerning the powers of the European Central Bank to impose sanctions	Nov. 23, 1998
No 2818/98	Regulation (EC) of the European Central Bank on the application of minimum reserves	Dec. 1, 1998

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Calendar of Monetary and Economic Highlights	2/2000
Calendar of Monetary and Economic Highlights	3/2000
The New Millennium – Time for a New Economic Paradigm? – Results of the OeNB's 28th Economics Conference	3/2000
Calendar of Monetary and Economic Highlights	4/2000
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Calendar of Monetary and Economic Highlights	2/2001
The Single Financial Market: Two Years into EMU – Results of the OeNB's 29th Economics Conference	2/2001
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Money and Credit in the First Half of 1999	3/1999
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Money and Credit in the First Three Quarters of 1999	4/1999
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Calculating the Thresholds for the Notification of Mergers of Banks – The New Legal Situation	2/2000
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EURIBOR Interest Rate Instruments as Indicators of Financial Market Expectations	2/2002

Interest Rates

An International Comparison of Term Structures – Estimations Using the OeNB Model	1/1999

1 *For a comprehensive list of reports, summaries and studies hitherto published please refer to issue no. 1/2002 of "Focus on Austria."*

Published in
"Focus on Austria"

Austrian Capital Market

Venture Capital in Austria	2/2000
Austrian Stock Market Survey and Outlook	4/2000

Austrian Bond Market

Austrian Bond Market Developments	1/2001

Austrian Real Economy

Economic Background	1/1999
Financial Assets and Liabilities of Enterprises and Households in the Years 1995 to 1997	1/1999
Economic Outlook for Austria from 1999 to 2001	2/1999
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Economic Background	3/1999
Financial Accounts in Accordance with ESA 95 – Financial Assets and Liabilities of the Sectors of the Austrian Economy; First Release of Data for the Years 1995 to 1997	3/1999
Economic Outlook for Austria from 1999 to 2001 (Fall 1999)	4/1999
Impact of the Recent Upturn in Crude Oil Prices on Inflation in Austria – A Comparison with Historic Supply Shocks	4/1999
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The Payment Habits of Austrian Households – Results of a Study on the Use of Payment Cards and the Structure of Payment Transactions in 2000	1/2002
Economic Outlook for Austria from 2002 to 2004 (Spring 2002)	2/2002

Published in
"Focus on Austria"

Economic and Monetary Union

Harmonized Indices of Consumer Prices –
Progress and Unresolved Problems in Measuring Inflation   2/1999
Economic Policy Co-operation in EMU:
European Economic Policy Challenges   2/1999
Effects of the Euro on the Stability of Austrian Banks   3/1999
The Austrian Banks at the Beginning of Monetary Union –
The Effects of Monetary Union on the Austrian Banking
System from a Macroeconomic Perspective   3/1999
Recent Developments on the Meat Markets and Their Impact
on Inflation in Austria and the Euro Area   1/2001
Economic Aspects of the Euro Cash Changeover in Austria   2/2001
Central Banks and the Challenges of the Information Economy –
Are We on the Road to e-CBs?   1/2002

List of Studies
on Focus on Austria Main Topics

Focus on Austria 2/2000:

The Monetary Policy of the Eurosystem
Monetary Policy and Monetary Policy Strategy in EMU:
New Framework – New Challenges
The Credibility of the Eurosystem
Monetary Growth during the Changeover to Economic
and Monetary Union
Indicators for Assessing Price Changes
Estimate and Interpretation of the Taylor Rule for the Euro Area
Modification to the Monetary Policy Framework
and Structural Changes in the Austrian Money Market
in Stage Three of EMU

Focus on Austria 3/2000:

On a New Capital Adequacy Framework
as Proposed by Basel and Brussels
Regulatory Capital Requirements for Austrian Banks –
A Supervisory Tool Subject to Change
Supervisory Review
Credit Risk
Critical Evaluation of the Basel Committee's
and the European Commission's Proposals on the
Treatment of Other Risks in the New Capital Adequacy Framework
Interest Rate Risk in the Banking Book

Focus on Austria 2/2001:

The New Framework
for Fiscal Policy
Fiscal Policy Design in the EU
Measures and Strategies for Budget Consolidation
in EU Member States
Distributive Aspects of Economic Policy in EMU –
An Analysis from an Employee Perspective
Problems Relating to the Taxation of Cross-Border Capital Income
Austria's Sovereign Debt Management Against the Background
of Euro Area Financial Markets
Cyclically Adjusted Budgetary Balances for Austria

Focus on Austria 3−4/2001:

Aspects of the Transmission of Monetary Policy

The Transmission Mechanism
and the Role of Asset Prices in Monetary Policy
Asymmetric Transmission of Monetary Policy
through Bank Lending –
Evidence from Austrian Bank Balance Sheet Data
Balance Sheet and Bank Lending Channels:
Some Evidence from Austrian Firms
Financial Innovation and the Monetary Transmission Mechanism
Transmission Mechanism and the Labor Market:
A Cross-Country Analysis
Monetary Transmission and Fiscal Policy
Principles for Building Models of the
Monetary Policy Transmission Mechanism

Focus on Austria 2/2002:

EU Enlargement to the East:
Effects on the EU-15 in General
and on Austria in Particular

The Impact of EU Eastward Enlargement on Wages
in the Current Member States with Special Reference to Austria
Institutional Implications of EU Enlargement
in the Area of Economic and Monetary Policies
The Banking System in the Accession Countries
on the Eve of EU Entry
The Integration of Eastern Europe –
Effects on Stocks and Bond Markets
Exchange Rate Strategies of the EU Accession Countries
on the Road to EMU: Impact on the Euro Area

Focus on Austria 3/2002:

Wage Formation in the Euro Area

EMU and European Wage Coordination
Employment and Wage Adjustment in the Euro Area's Labor
Market – a Bird's Eye View
Wage Setting and Strategic Interaction
With and Without a Monetary Union
The Role of Wage Policies in a Monetary Union

Publications
of the Oesterreichische Nationalbank

Periodical Publications

	Published
Statistisches Monatsheft	monthly
Focus on Statistics	
(English translation of "Statistisches Monatsheft")	http://www.oenb.at
Leistungsbilanz Österreichs, revidierte Jahresdaten	
gegliedert nach Regionen und Währungen	annually
Berichte und Studien	quarterly
Focus on Austria (selected chapters from	
„Berichte und Studien")	quarterly
Focus on Transition	semiannually
Finanzmarktstabilitätsbericht	semiannually
Financial Stability Report	
(English translation of "Finanzmarktstabilitätsbericht")	semiannually
Geschäftsbericht	annually
Annual Report (English translation of "Geschäftsbericht")	annually
Volkswirtschaftliche Tagung	
(for a list of the topics discussed at the conferences,	
see below)	annually
The Austrian Financial Markets –	
A Survey of Austria's Capital Markets – Facts and Figures	annually

Other Publications

New Developments in Banking and Finance	
in East and West (Kranichberg 1989)	1990
Erfahrungen Österreichs beim Übergang von administrativer	
Regulierung zur Marktwirtschaft (Moscow 1990)	1990
Challenges for European Bank Managers in the 1990s	
(Badgastein 1990)	1991
From Control to Market - Austria's Experiences	
in the Post-War Period (Warsaw 1990)	1991
The Economic Opening of Eastern Europe	
(Bergsten Conference Vienna 1991)	1991
Erneuerung durch Integration –	
175 Jahre Oesterreichische Nationalbank	1991
Striking a Balance – 175 Years of Austrian National Bank	1991
Transparente Dispositionen – Liberalisierter Devisenverkehr	
unter Beachtung internationaler Publizitätsverpflichtungen	1991
Ausgeglichene Position – Die neue Präsentation	
der österreichischen Zahlungsbilanz	1992
Aktive Bilanz – Ein Jahr vollständig liberalisierter	
Devisenverkehr in Österreich	1992
Economic Consequences of Soviet Disintegration	
(Bergsten Conference Vienna 1992)	1993
Neuorientierung – Internationale Vermögensposition	
und Außenwirtschaftliche Investitionsbilanz Österreichs	1993
Bankwesengesetz 1993	1994

Other Publications (cont.)

	Published
Internationale Vermögensposition 1992 – Die grenzüberschreitenden Forderungen und Verpflichtungen Österreichs	1994
International Investment Position for 1992 – Austria's Cross-Border Assets and Liabilities	1994
Western Europe in Transition: The Impact of the Opening-up of Eastern Europe and the Former Soviet Union	1995
Die Oesterreichische Nationalbank als Unternehmen	1996
Monetary Policy in Central and Eastern Europe: Challenges of EU Integration	1996
Monetary Policy in Transition in East and West	1997
Die Auswirkungen des Euro auf den Finanzmarkt Österreich	1997
Die Bank der Banken	1997
Die Zukunft des Geldes: Auf dem Weg zum Euro Grundlagen – Strukturen – Termine	1997
Geld & Währung	1997
Kompendium von Texten zur Wirtschafts- und Währungsunion	1997
Nationalbankgesetz 1984 (as of January 1999)	1999
Information literature on banknote security	recurrently

Videos

Wie Mozart entsteht (banknote security)	1990
The Evolution of W. A. Mozart (English version of "Wie Mozart entsteht")	1995
Bank der Banken (tasks and functions of the OeNB)	1991
The Banks' Bank (English version of "Bank der Banken")	1991
Fenster, Tore, Brücken: Eurogeld aus Österreich	1997
Das Geld von Morgen	1997
Der Euro stellt sich vor	2001

List of the Topics Discussed at the Economics Conferences (Volkswirtschaftliche Tagungen)

1975	Die ökonomischen, politischen und sozialen Konsequenzen der Wachstumsverlangsamung
1976	Störungsanfällige Bereiche in unserem ökonomischen und sozialen System
1977	Fiskalismus kontra Monetarismus
1978	Wirtschaftsprognose und Wirtschaftspolitik
1979	Technik-, Wirtschaftswachstums-, Wissenschaftsverdrossenheit: Die neue Romantik – Analyse einer Zeitströmung
1980	Probleme der Leistungsbilanz in den achtziger Jahren
1981	Systemkrisen in Ost und West
1982	Forschung und Wirtschaftswachstum
1983	Ausweg aus der Krise – Wege der Wirtschaftstheorie und Wirtschaftspolitik
1984	Der Weg zur Welthandelsnation
1985	Weltanschauung und Wirtschaft
1986	Vollbeschäftigung, ein erreichbares Ziel?
1987	Vollendung des Binnenmarktes in der Europäischen Gemeinschaft – Folgen und Folgerungen für Österreich
1988	Sand im Getriebe – Ursachen und Auswirkungen der Wachstumsverlangsamung in Österreich
1989	Banken und Finanzmärkte – Herausforderung der neunziger Jahre
1990	Wettbewerb und Kooperation im Finanzbereich
1991	Wirtschaftliche und politische Neugestaltung Europas – Rückblick und Perspektiven
1992	Zukunft regionaler Finanzmärkte in einem integrierten Europa
1993	Europäische Währungspolitik und internationaler Konjunkturverlauf
1994	Neue internationale Arbeitsteilung – Die Rolle der Währungspolitik
1995	Die Zukunft des Geldes – das Geld der Zukunft
1996	Auf dem Weg zur Wirtschafts- und Währungsunion – Bedingungen für Stabilität und Systemsicherheit
1997	Die Bedeutung der Unabhängigkeit der Notenbank für die Glaubwürdigkeit der europäischen Geldpolitik
1998	Wirtschaftspolitik 2000 – Die Rolle der Wirtschaftspolitik und nationaler Notenbanken in der WWU
1999	Möglichkeiten und Grenzen der Geldpolitik
2000	Das neue Millennium – Zeit für ein neues ökonomisches Paradigma?
2001	Der einheitliche Finanzmarkt – Eine Zwischenbilanz nach zwei Jahren WWU
2002	Wettbewerb der Regionen und Integration in der WWU (Competition of Regions and Integration in EMU)

List of the Topics
Discussed in the Working Papers[1])

1 *For a comprehensive List of the Topics Discussed in the Working Papers please refer to issue no. 12/2001 of "Statistisches Monatsheft."*

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