ÖNB

Focus on Austria
1 / 2003

This Issue's Special Focus:
Finance for Growth

Oesterreichische Nationalbank

Focus on Austria

1 / 2003

Contents

Observers will find at least one common economic theme running through the 20th century: financial market development (as impressively documented by Kindleberger [1984]). From the wide range of aspects related to "finance and growth," to which this entire volume of Focus on Austria is dedicated, this introductory paper highlights three selected issues that are fundamental to finding adequate policy prescriptions for economic policy decision-making and that are key to the current discussion: (i) "does finance matter," (ii) what are the essential functions of financial markets and the important characteristics of financial market transactions, and (iii) which financial system is preferable, a perennial topic of debate. The paper concludes that first, almost by definition, functional efficiency is the priority a financial system needs to fulfill from a macroeconomic point of view. Factors determining the transfer of financial funds to investors are essential for the potential level of investment and the growth path of the economy to be realized. Second, combining the different historical, economic policy and financial market perspectives, there seems to be a clear need for a paradigm shift in economics, in the direction of a macroeconomic theory integrating financial markets and their impact on real developments into the core of the analysis.

The paper explores the effects of stock markets on business investment. Next to the direct finance effect several indirect channels are identified and discussed, i.e. the allocation of investment, the effects through balance sheets on the stability of the financial systems, the wealth effect on consumption and corporate governance effects. Among these, the intuitively appealing direct effect and the indirect corporate governance effect are discussed most extensively. The empirical evidence regarding the financing effect is clear, if surprising. Stock markets play little role in financing investment and investment reacts little, if at all, to changes in share prices. Changes in corporate governance have become prominent recently. The paper proposes a post-Keynesian model thereof and presents evidence that the increase in shareholder power may have reduced investment.

Contents

This paper finds that the corporate governance environment of a firm affects the relationship between investment and cash flow. The relation differs systematically across identities of controlling owners. For a sample of Austrian nonfinancial firms, we find that family-controlled firms appear to suffer from cash constraints as evidenced by a positive and robust relationship of investment to cash flow. State-controlled firms also exhibit a positive and significant cash-flow sensitivity, which we explain by managerial discretion. We do not find cash flow-induced investment spending for bank-controlled firms. Our results have important implications for the nexus between finance and growth: We show that some firms underinvest while at the same time some firms overinvest. Better, and presumably, larger financial markets, by more efficiently screening the investment opportunities of the firm, may affect economic growth.

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

SUPPLEMENTS

Editorial

The title of this volume "Finance for Growth" can be read in two different ways: First, it asks whether financial sector development has an impact on economic growth, an issue which has become a major topic of empirical research on economic growth. Second, it involves a normative query: Which structure of the financial system at the respective development stages of the economy may better foster growth? This second connotation of our "Finance for Growth" subject has found its way into the growth literature only recently, despite the fact that economists and policymakers have debated the relative merits of bank-based versus market-based financial systems for over a century.

With regard to the first issue, despite the econometric difficulties encountered, a consensus about the significant role of the financial sector in growth has been emerging, a finding that has also been confirmed by recently developed dynamic panel techniques. But part of the literature makes the case that deeper financial market development may be more vulnerable to crises. When regulatory capabilities lag behind financial sector development, this may lead to crises that inhibit growth. Concerning the second issue – which financial structure better supports growth – the empirical findings in the literature are less clear. While a recent OECD study has shown that stock market development has promoted growth in high income countries (Leahy et al., 2001), Hahn (2002) has found that the significant positive coefficient of stock market development on growth becomes insignificant when a stock market indicator is used that is less sensitive to share price effects.

This volume puts together papers presented at the Workshop of the Oesterreichische Nationalbank on "Finance for Growth" on January 27, 2003. The studies are related not only to these two lines of research, they also tackle new issues in the area of financial sector development and its impact on the real economy. The first contribution by *Peter Mooslechner* (Finance for Growth, Finance and Growth, Finance or Growth …? Three Perspectives on the Interaction of Financial Markets and the Real Economy) highlights three selected aspects that are key to economic policy decision making. First, the main lines of economic research on financial markets are reviewed and contrasted with real life phenomena and our insights derived from historical studies. While economic history literature attributes an essential role to the financial sector in determining the real economy, mainstream economic theory has only recently begun to account for some of the financial market failures in its models, though the list of failures covered is far from complete. Second, the characteristics of financial transactions that are fundamentally different from transactions on product markets and the multiple, mutually nonexclusive functions of financial markets are analyzed. Third, the debate of the relative merits of a market-based and a bank-based financial system that was sparked at the end of the past century is reviewed. While the recent literature does not attest either of the two models a particular advantage with respect to economic growth, research has increasingly focused on the developmental state of the financial sector, concluding that well-developed financial markets have a positive impact on overall economic performance. Finally, the author is supportive of a paradigm shift in economics that integrates financial markets and their impact on real developments into the core of the analysis.

The paper by *Engelbert Stockhammer* (Stock Markets, Shareholder Value and Investment) explores the effects of stock markets on business investment. The author tests whether the development of a market for corporate control and the reorientation of management priorities along the lines of creating shareholder value (financialization) have reduced growth in investment. The study finds strong support for the hypothesis that "financialization" led to a slowdown in accumulation in the United States and France, some support for the United Kingdom and none for Germany.

While the empirical literature linking financial sector development and the real economy focuses almost exclusively on the impact of the financial sector on economic growth, only few studies have so far investigated its impact on the business cycle. Two papers explore this novel research focus. *Franz Hahn* (Financial Development and Macroeconomic Volatility: Evidence from OECD Countries) examines the linkage between financial development and business cycle fluctuations in 22 OECD countries over the period 1970 through 2000. More specifically, the role financial development has in the propagation of real and monetary shocks is explored. In line with economic theory it is shown that both market-based and bank-based financial systems magnify monetary shocks and dampen real shocks. Interestingly, the tentative results indicate that stock markets destabilize the business cycle.

Closely related to the issue of financial sector linkage with macroeconomic volatility is the study by *Benedikt Braumann* (A Financial Decelerator in Europe? Evidence from Austria). The paper more generally analyzes the history of financial liberalization in Austria, whose financial markets ranked among the most repressed in Europe until the late 1970s. There are many reasons why financial market liberalization was not associated with financial crises. Special attention is given to the large Austrian banking sector, which tended to dampen monetary shocks through a system of endogenous buffers, and the prevailing impact of relationship lending that sharply reduced the role of the bank lending channel. *Maria Valderrama* (Banking Structure and Investment in Austria: Some Empirical Evidence) investigates the impact on investment behavior of these bank-lending relationships, which are important in Austria. This innovative work determines the effects of banking structure, firm characteristics and lending relationships simultaneously within one model. It is found that the existence of a house bank matters for investment in Austria. Interesting results are reported for the effect of banking structure and firm characteristics on investment. Contrary to expectations and to findings for other countries, for example, small firms benefit more from narrow lending relationships with a large bank.

Klaus Gugler (Corporate Governance, Investment, and the Implications for Growth) tests the influence of cash constraints on the investment decisions of firms and shows for Austrian nonfinancial firms that corporate governance has important implications for the nexus between finance and growth: For family-controlled firms positive investment-cash flow sensitivities indicate cash constraints and underinvestment, while positive investment-cash flow sensitivities found for state-controlled firms suggest managerial discretion and over-investment. The author does not find cash flow-induced investment spending for bank-controlled firms.

The workshop closed with a panel discussion on the issue: "What Kind of Financial System Works Best for Europe?" This volume concludes with a reprint of the statements by the panelists of the workshop. For *Engelbert Stockhammer,* the issue of which financial system is preferable should be based not only on functional efficiency criteria, but also on political economy considerations. He mentions distribution effects that are closely related to financial structures and the room for maneuver of national economic policy that can probably be implemented more easily in bank-dominated financial systems. *Peter Mooslechner* argues along similar lines. He states that financial systems have to be designed to optimize multiple goals, while he also makes the point that the strong regional differences between European financial systems require different policy prescriptions. In Austria, e. g., it seems that the implicit risk allocation that has historically evolved between the state, financial markets and private agents is no longer viable. A substitute has to be found that serves the multiple goals of a financial system and safeguards financial stability. *Franz Hahn* considers the difference between market- and bank-based financial systems minor with regard to their financing function. However, the systems diverge in the way in which they allocate and diversify risks. The governance function plays only a small role in both systems given the fact that insiders tend to instrumentalize outsiders.

With respect to the determinants of financial sector development, *Engelbert Stockhammer* argues against the prevailing wisdom that the financial system is the outcome of a natural process, a point which is made by *Franz Hahn,* according to whom the transformation towards a market-based financial system is closely related to the development of civic society. The financial system, according to *Engelbert Stockhammer,* is a product of the society it serves: "This setup can be changed, but it takes a genuine will to change it."

Helene Schuberth
Martin Schürz

Bibliography

Leahy, M., Schich, S., Wehinger, G., Pelgrin, F., Thorgeirsson, T. (2001). Contributions of Financial Systems to Growth in OECD Countries. Paris: OECD Economics Department Working Papers 280.

Hahn, F. (2002). The Finance-Growth Nexus Revisited: New Evidence from OECD Countries. In: WIFO Working Paper 176.

REPORTS

Austria

October 2002

4　An *amendment to the Personal Income Act* 1988 (Federal Law Gazette Part I No. 155/2002) paved the way for the introduction of new state-subsidized personal pension plans as of 2003.

　　The subsidy for contributions to these new schemes is 5.5% – the same rate applicable to payments into subsidized pension savings plans as introduced by the tax reform in 2000 – plus the rate applicable to savings plans with building and loan associations; thus, the subsidy currently totals 10%. The maximum contribution qualifying for the 10% subsidy is EUR 1,800, as opposed to EUR 1,000 for other state-subsidized investment instruments. At least 60% of the pension plan assets must be invested in stocks which were initially listed at the stock exchange of an EEA member country; the total stock market capitalization of the stocks initially listed in this EEA member country must not exceed 30% of the national GDP. At the same time, pension plan members must get a capital guarantee of 100% of contributions plus the interest credited to the member's account.

10　According to a study by the *Austrian Institute of Economic Research (WIFO),* the introduction of euro cash did not push up prices on a large-scale. However, there have apparently been some areas where the cash change-over was used as a chance for "euro profiteering."

December 2002

5　*Reference Rate Cut*

　　Following the monetary policy decision taken by the Governing Council of the ECB at its meeting on December 5, 2002, to cut the interest rate on the marginal lending facility by 0.50 percentage point to 3.75% with effect from December 6, 2002, in Austria the *reference rate* is reduced by 0.50 percentage point to 4.00% with effect from December 6, 2002, as required by the first euro-related amendment to civil legislation (Federal Law Gazette Part I No. 125/1998) and as specified in the corresponding regulation (Federal Law Gazette Part II No. 27/1999, as amended).

10　*Base Rate Cut*

　　The marginal interest rate on the main refinancing operation of the European Central Bank to be settled on December 11, 2002, is 2.82%, down by 0.55 percentage point against the interest rate calculated for the main refinancing operation (3.37%) settled immediately after the latest change of the base rate (November 9, 2001). Thus, in accordance with Article 4 of the corresponding regulation (Federal Law Gazette Part II No. 27/1999, as amended) the base rate is reduced by 0.55 percentage point to 2.20%, with effect from December 11, 2002.

European Union
September 2002

6–8   At its informal meeting in Copenhagen, the *Ecofin Council* discusses the world economic situation, the Report on Financial Regulation, Supervision and Stability by the Economic and Financial Committee (EFC), the amendment of the European Investment Bank (EIB) statutes to account for enlargement, the cross-border clearing and settlement arrangements, the work of the European Convention and the impact of the floods in Austria and Germany. Moreover, the meeting serves to prepare the Annual Meeting of the International Monetary Fund (IMF). The informal Ecofin Council agrees that EU Member States are to include "collective action clauses" in new sovereign bond issues.

9   The *Joint Employment Report 2002* states that unless efforts are stepped up to adjust wages and raise the level of qualification and flexibility, mass unemployment may occur in the problem regions, in particular in the ten EU accession countries, possibly triggering migration to the more prosperous regions of the EU.

10   The *U. K. Treasury* publishes a set of 14 economic test criteria (e.g. concrete control of budget deficits, possible inflationary effects following the introduction of the euro) in preparation for a nation-wide referendum on joining the single currency. This step means a toughening of the previous five economic tests to be met by the U.K. and is thus likely to be a stumbling block on the way to EMU entry.

11   The latest *Eurobarometer* survey on financial services (survey period: August/September 2001) shows that consumers feel powerless vis-à-vis financial services suppliers and ill-informed about financial products. For reasons of convenience, cash remains the preferred means of payment (47%). 56% of consumers refuse to use the "electronic purse," while 80% have no experience with "distance payment," i.e. payment via telephone or the Internet.

12   The *European Commission* promises to provide funds of up to EUR 1 billion for flood relief in Austria, Germany and France by end-2002. The money is earmarked for reconstruction in the flood-stricken areas.

12/13   The *EU Convention* holds a plenary meeting in Brussels. The main focus of the debate is the simplification of instruments and procedures in the European Union (EU). Apart from a first round of orientation talks on this topic, two working groups (on "Legal Personality" and on "Subsidiarity") present their interim results. Moreover, the Convention agrees on the establishment and composition of four additional working groups ("External Action," "Defence," "Simplification of Instruments and Procedures" and "Security/Justice").

13   For the first time, the *European Commission* presents to the EU accession countries a working document containing an estimate of their prospected contribution payments to, and receipts from, the EU budget for the first three years following EU entry.
      According to this working paper, four of the ten applicant countries would be net contributors in their first year of membership, unless EU Member States make lump-sum compensation payments, as suggested

by the Commission. The Commission paper goes on to state that the ten new Member States stand to receive EUR 8.8 billion net from the EU budget during the first three years of membership.

22–24 At the Fourth *Asia Europe Meeting* (ASEM) Summit in Copenhagen the heads of state or government and the president of the European Commission discuss world economic developments.
They agree, inter alia, on strengthening the economic and fiscal policy dialogue and on developing joint action plans for financial markets and capital movement.

24 Given the unfavorable cyclical situation, the *European Commission* postpones the demand for balanced budgets in the euro area countries from 2004 to 2006. According to European Commission president Romano Prodi, this decision does not alter the Stability and Growth Pact, as the Pact does not lay down any deadlines but merely commits euro area countries to achieve budget positions close to balance or in surplus in the medium term. The 2004 deadline is defined in the Broad Economic Policy Guidelines for 2002.

25 The *European Commission* opens the excessive deficit procedure (Article 104 EC Treaty) against Portugal. This is the first time such a step is taken vis-à-vis a Member State. The move was triggered by the official confirmation that Portugal's general government deficit had come to 4.1% of GDP in 2001, thus clearly exceeding the agreed 3% threshold. The deterioration of Portugal's budgetary position is only partly attributale to cyclical factors.

October 2002

1 In reaction to the excessive deficit procedure (Article 104 of the Treaty establishing the European Community) launched against *Portugal* by the European Commission, the Portuguese government passes a 2003 draft budget which envisages 10% cuts in current expenditure at all ministries; by these means, the general government deficit is to be brought down to 2.5% of GDP in 2003, well below the Maastricht Treaty reference value of 3% of GDP. Especially administrative costs and investment are to be reduced, whereas tax revenues are to be raised.

8 The *finance ministers of the Eurogroup* approve a proposal put forward by Commissioner for Economic and Monetary Affairs Pedro Solbes as to the application of the provisions of the Stability and Growth Pact: 11 euro area countries, i.e. all member countries with the exception of France, commit themselves to reducing their cyclically adjusted deficits by a minimum of 0.5 percentage point every year starting from 2003. Also, the 12 finance ministers pledge to avoid excessive new debts and to achieve balanced budgets in the medium term.
Issues on the agenda of the *ECOFIN council meeting* include taxes (taxation of savings and energy), the streamlining of the annual economic and employment policy coordination cycles, the evaluation of the European employment strategy, budgetary and financial aspects of EU enlargement, insurance for airlines, and Russia. As to financial stability, supervision and integration, the EU finance ministers approved a report on

harmonized regulatory rules for securities markets, banks and insurance companies. The proposals on the regulation of European securities markets drawn up under the chair of former Belgian central bank governor Alexandre Lamfalussy are to be applied to banks' and insurance companies' other fields of business.

9   In its Regular Reports and the Enlargement Strategy Paper, the *European Commission* proposes that the EU heads of state and government conclude accession negotiations with Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia by the end of the year. Bulgaria's and Romania's efforts to achieve their objective of EU accession by 2007 are to be supported. As regards Turkey, the European Commission proposes stepping up preaccession assistance. The accession countries are called upon to make further improvements, especially in public administration and in the legal system, in order not to jeopardize the ratification of the accession treaties by the Member States. Close monitoring and regular reports by the European Commission are to keep the accession countries on the track of economic reform. The European Commission's findings will be reviewed by the European Council at its meeting on October 24 and 25 in Brussels.

18   *European Commission President Romano Prodi* harshly criticizes the Stability and Growth Pact, demanding more financial room for maneuver for Member States. Commissioner for Economic and Monetary Affairs Pedro Solbes defends the pact. The European Central Bank (ECB) reiterates its calls to comply with the provisions of the Stability and Growth Pact.

19   In a second referendum, a clear majority of *Irish* voters (62.83%) turns out in favor of the ratification of the Treaty of Nice, the basis for EU enlargement. The Treaty of Nice was negotiated in December 2000 and is to be ratified by end-2002.

21   In *Sweden,* Prime Minister Göran Persson presented his new cabinet. Political commentators suggest the ministers have been picked also with a view to the referendum on the introduction of the euro in Sweden, which is expected to take place in 2003. The Swedish ambassador to the EU, Gunnar Lund, was appointed deputy finance minister.

21/22 *EU foreign ministers meeting in Luxembourg* approve the European Commission's recommendation to conclude accession negotiations with ten accession countries.

24   *Germany* accepts the excessive deficit procedure the EU is expected to launch in the near future.

24/25 *EU enlargement* is the top item on the agenda of the European Council meeting in Brussels. The European Council approves the European Commission's proposal on the selection of the ten future EU Member States. The EU has committed itself to concluding accession negotiations with these countries at the European Council in Copenhagen on December 12 and 13, 2002, and to signing the accession treaties in April 2003 in Athens. The European Council declares its support for Bulgaria's and Romania's efforts to fulfill the accession criteria by 2007. The elements

for deciding on the next stage of Turkey's candidature are to be prepared by the Council in time for the Copenhagen European Council.

Furthermore, the EU heads of state and government agree on the financing terms for enlargement. If the projected cash flow balance with the Community's budget compared to the year 2003 is negative for individual accession countries in the years 2004 to 2006, temporary budgetary compensation will be offered.

The European Council hears a report of the president of the European Convention, Valéry Giscard d'Estaing, on the progress of the Convention's proceedings.

25 The *Governing Council of the ECB* decides to enhance the TARGET system for large-value payments between national central banks. In view of the upcoming EU enlargement, the present multiple platform system is to be maintained and supplemented by a "shared component." Furthermore, TARGET 2 will have a broadly defined core service, for which there will be a single Eurosystem-wide price structure. The new system is to become operational in 2005 at the earliest.

28 On the occasion of the *plenary meeting of the European Convention,* President Valéry Giscard d'Estaing presents a draft structure of a future Constitutional Treaty. The first part is to consist of constitutional provisions laying down the institutional architecture, whereas the second part is to contain provisions dealing with the Union's policies and actions, which can be amended more easily. The Constitutional Treaty is to be negotiated by the EU national governments during the second half of 2003. The ECB is to be given the status of an EU institution. The Convention's working group on economic governance presents its final report. As opinions on key questions differ widely, it does not contain substantial reform proposals. One of the few issues on which the group has reached agreement is the competence for monetary and economic policies: the ECB is to retain the exclusive responsibility for monetary policy, whereas economic policies are to remain in the hands of the national governments. The ECB is to remain independent of political influence.

November 2002

5 At their meeting in Brussels, the *Eurogroup* finance ministers call upon the European Commission to look into the reasons why inflation rates are comparatively high in Ireland, Portugal, Spain, the Netherlands and Italy. Euro area inflation is expected to reach 2.3% in 2002, thus exceeding the ceiling set by the Eurosystem.

The *Ecofin Council* discusses the framework proposed by Switzerland for solving the issue of savings taxation, combining a withholding tax on interest income accrued to EU citizens, voluntary information sharing (leaving it up to EU nationals whether to pay withholding tax in Switzerland or report the savings income earned abroad to their home tax authorities), cross-country exchange of information on request and a revision clause. EU Internal Market Commissioner Frits Bolkestein reports on the current state of negotiations with Switzerland on the

taxation of savings. According to Mr. Bolkestein, Switzerland is prepared to introduce a 35% withholding tax from January 1, 2004, provided that Belgium, Luxembourg and Austria, which will apply a withholding tax until 2010 instead of the envisaged EU-wide automatic exchange of information, agree to levy 35% as well, rather than initially 15% and later 20% as envisaged. The Directive on the taxation of savings income should be adopted by the end of 2002.

The Ecofin Council endorses uniform rules for the approval of prospectuses ("European passport for issuers"). The EU finance ministers agree that issuers will be free to select the authority which is to approve their prospectus above a threshold value of EUR 5,000, i.e. in approximately 50% of all securities issues.

The Ecofin Council identifies an excessive deficit in Portugal (under Article 104.6 of the Treaty) and issues a recommendation to remedy this situation at the latest by 2003.

7   Positions diverge strongly in a plenary discussion of the report submitted by the *European Convention* working group on economic governance. A broad consensus evolves only on the following issues: the mandate and the tasks of the European Central Bank (ECB) shall remain unchanged; the division of competences between the ECB for monetary policy and the Member States for economic policies is to be left unchanged. Regarding a strengthening of the role of the European Commission in coordinating economic policies, a clear majority supports the idea of empowering the Commission to directly issue an early warning to a Member State that it finds to be running up an excessive deficit.

11 The *European Commission* publishes its latest Internal Market Scoreboard ("Ten years of the Internal Market without frontiers"). Germany is among the countries with the highest "implementation deficit." 80% of Europeans believe that the Internal Market has enlarged the range of available products; nearly half of all businesses across the EU say that the dismantling of internal frontiers has improved their competitive positions.

12 A study conducted for the *European Commission* provides evidence that completing the integration of EU financial markets will continually boost growth across the EU. Conservative estimates put the integration-related increase in EU-wide real GDP growth over the next decade at 1.1% or EUR 130 billion or EUR 350 per capita.

13 The *European Commission* expects Germany to reach a deficit of 3.8% of GDP in 2002 and a deficit of 3.1% of GDP in 2003. As a result, the Commission initiates an excessive deficit procedure (according to Article 104 of the Treaty) against Germany.

At the same time, *Pedro Solbes,* EU Commissioner for Economic and Monetary Affairs, recommends to the Council to send an early budget warning (as set out in regulation 1466/97 of the Stability and Growth Pact and in line with Article 99.4 of the Treaty) to France, given the clear risk that France may breach the 3% deficit threshold in 2003.

14   According to an *ECB* review of the international role of the euro, the euro has asserted itself as a leading currency in the international debt securities market in the four years since it was introduced. By mid-2002, the euro had expanded its share in international money market issuance to 39%, thus even narrowly exceeding the share of the U.S. dollar (38%). For broadly defined international debt securities, the euro accounted for a share of 39% of the market as well, compared with a share of 45% for the U.S. dollar and 6% for the Japanese yen. By contrast, the euro plays a comparatively small role as an investment currency and as a transaction currency in international trade.

14   *Sveriges Riksbank,* the central bank of Sweden, lowers its repo rate from 4.25% to 4%, motivated by expectations that the inflation rate is about to fall below the target of 2% in 2003.

18   At the *EU Council meeting on general affairs,* the foreign ministers of the incumbent EU Member States agree that the enlargement of the EU is to take effect on May 1, 2004. The accession treaties are due to be signed in April 2003. This leaves the European Parliament and the accession country parliaments one year to ratify the accession treaties and to conduct referendums where necessary. Moreover, the EU foreign ministers fix an upper ceiling for farming expenditure that may not be renegotiated after EU enlargement.

20   The *German ministry of finance* finds the macroeconomic equilibrium of Germany to have been distorted; only on such grounds does the national constitution allow the federal government to run a budget deficit that exceeds investment expenditure. According to the finance minister, the federal government budget deficit is set to reach EUR 34.6 billion in 2002, and investment spending EUR 25 billion.

21   The *Governing Council of the ECB* decides that, starting in 2003, a bank lending survey is to be conducted among 90 banks in the euro area at quarterly intervals.
      By a large majority, the European Parliament adopts a resolution not to devolve any additional legislative powers to the European Commission and to the planned special financial supervision committees as long as the European Parliament has not been empowered to cancel such devolutions.

26   Mervyn King, currently vice governor of the *Bank of England,* is designated to succeed the current governor, Sir Edward George, by Chancellor of the Exchequer Gordon Brown.

29   The *Swedish government* and all opposition parties agree to hold a referendum on the introduction of the euro on September 14, 2003.

December 2002

2   The *Eurogroup* expects euro area GDP growth to come to 2.7% in 2004, up from a projected 1.8% in 2003; in 2002, GDP growth will remain 0.8% below the forecast.

3   The *Ecofin Council* holds talks on the cross-border taxation of savings income in the EU and in nonmember countries, in particular in Switzerland, and on the exchange of information between tax authorities. The

draft directive agreed upon at the EU summit in Feira, Portugal, requires Austria, Belgium and Luxembourg to levy a 15% withholding tax from 2004 and to raise this rate to 20% after the first three years. Switzerland is willing to introduce a 35% withholding tax as of 2004 and to provide for an automatic exchange of information in cases of tax fraud, but refuses to report suspicious transactions linked to tax evasion. These steps might trigger large outflows of capital from the EU to Switzerland. Since negotiations have not produced results, the Ecofin Council Presidency agrees to hold an extraordinary Council session after the European Commission has successfully concluded more detailed discussions with Switzerland.

The Ecofin Council endorses by a large majority the establishment of committees at levels 2 (advisory) and 3 as well as of a reconfigured Financial Services Policy Group (FSPG) as proposed in the Economic and Financial Committee's Report on Financial Regulation, Supervision and Stability. The issue of delegating the powers to adopt implementing measures to the European Commission is left open.

Other items on the agenda include the streamlining of the annual economic and employment policy coordination cycle, structural indicators, corporate governance, the Financial Services Action Plan, integration and efficiency indicators, the proposal on a new directive on investment services, the Court of Auditors' annual report, energy taxation, and a strengthened coordination of budgetary policies.

5 The *Governing Council of the ECB* decides to cut the minimum bid rate on the main refinancing operations of the Eurosystem, conducted as variable rate tenders, by 50 basis points from 3.25% to 2.75%. The interest rates on the marginal lending facility and the deposit facility were also reduced by 50 basis points each, to 3.75% and 1.75%, respectively. ECB President Willem Duisenberg says that the interest rate cut has become necessary to improve the outlook for the euro area economy; there is also increased evidence that inflationary pressures are easing.

The Governing Council of the ECB reconfirms the reference value for M3 growth at 4½%.

5/6 On the occasion of the plenary meeting of the *European Convention,* the Working Group on Simplification of Legislative Procedures and Instruments recommends that the number of instruments be reduced from currently 15 to 6 (EU laws, EU framework laws, regulations, decisions, recommendations, opinions) and that codecision becomes the general rule for the adoption of legislative acts; in some exceptions to this rule, the Council of the European Union will have the sole decision-making power.

11 Despite lively debates and numerous bilateral talks, EU economics and finance ministers fail to reach an agreement on the cross-border taxation of savings income at the extraordinary *Ecofin Council* session. Yet, the Ecofin Council commits itself to formally adopting the entire taxation package prior to the European Council meeting in Brussels in March 2003.

12   *Portugal's ministry of finance* announces that the general government deficit will be below 3% of GDP in 2002, thanks to extraordinary revenues, especially from the sale of the state-owned fixed-line telecommunications network.

12/13 The *European Council* of Copenhagen concludes the accession negotiations launched in Copenhagen in 1993 with ten accession countries (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia). These countries are to join the EU on May 1, 2004, which will enable them to take part in the elections to the European Parliament in June 2004. The new European Commission is to take office on November 1, 2004.

According to the European Council, the target year for Romania and Bulgaria to join the EU is 2007.

The European Council agrees that it will decide in December 2004 whether Turkey fulfils the Copenhagen political criteria. If the Council decides in favor of Turkey, the EU will open accession negotiations without delay.

As regards unresolved budgetary and financial issues, the EU heads of state or government adopt a bundle of measures worth EUR 40.8 billion, including agriculture and structural fund expenditures. These funds exceed the last proposal put forward by the European Commission by EUR 408 million.

The European Council decides that the European Convention will present the results of its work in time for the European Council of Thessaloniki in June 2003. The ensuing intergovernmental conference could be launched under Italian EU presidency in November 2003; the future European Constitutional Treaty would be signed after the accession of the new Member States in the first half of 2004.

16   The *European Commission* presents a report which states that most of the EU Member States' pension systems are not sustainable. In order to defuse the potential "pensions time bomb," political and economic policymakers are called upon to adapt the world of work to demographic developments. Older workers should be encouraged to stay longer in employment (the actual retirement age in Europe is to be raised from the current average of 58 years to 63 years), which would automatically result in higher contributions being paid into pension systems. The trend towards early retirement is to be stopped.

17   The *European Central Bank* launches a new public consultation exercise to ascertain the views of users and the interested public on the next generation of the TARGET large-value payment system (TARGET 2).

19   The *European Commission* issues a communication entitled "The introduction of euro banknotes and coins – one year after." According to the latest Eurobarometer survey, 49.7% of euro area citizens feel happy with the euro. A large majority believes that the number of existing denominations for banknotes (83.7%) and coins (53.5%) is just right. However, the psychological changeover of Europeans seems to be far from complete: 42.2% of consumers already calculate mainly in euro, but this

percentage drops to 12.5% when large purchases are being made (e.g. a house or a car).

20 *Greece* and *Italy* present a joint work program for their EU *council presidencies* in 2003. It is the first time that two countries have prepared such a joint program. The priorities of the Council of the European Union in 2003 will be to finalize the Accession Treaties for signature in April 2003 and to take forward work towards the completion of structural and institutional reforms that have become necessary because of enlargement by opening the Intergovernmental Conference, which is to conclude its discussion on the basis of the draft constitution proposed by the European Convention, during the second half of the year.

Furthermore, the presidencies aim to strengthen Europe's economic and social cohesion, to promote sustainable development, to achieve progress on issues like asylum, immigration and the management of external borders, and to contribute to global stability.

The *European Convention* Working Groups on "External Action" and "Defence" present their final reports to the plenary meeting. The External Action working group recommends that the EU should work, where appropriate, for changes in the statutes of international organizations to allow for membership for the Union, without prejudice to the status of EU Member States within these organizations. The euro area members of the working group express support for a single representation of the euro area in international financial institutions.

President Giscard d'Estaing introduces the work program for the coming months, according to which the complete draft versions of the European Constitutional Treaty are to be presented at the European Council of Thessaloniki on June 20 and 21, 2003.

23 The *French government* submits to the European Commission its medium-term budget plan for 2004 to 2006, committing itself to bringing down the general government budget deficit, which is projected to rise to 2.8% in 2002, to 1% of GDP by 2006.

January 2003

1 *Greece* assumes the rotating *EU Presidency* on January 1, 2003, and plans to focus on the following economic and financial topics: EU enlargement, strengthening economic policy coordination, particularly in the area of budgetary policies, resolving the remaining outstanding issues in the areas of the tax package, integration of European financial markets, the international effort to restore confidence and stability in global financial markets, the implementation of the Financial Services Action Plan, reforms of goods and services markets, employment policy, structural policy within the framework of the Lisbon process, closer cooperation on economic and financial issues between the current and future Member States.

2 In its Review of the International Role of the Euro, the *European Central Bank (ECB)* observes that the share of euro-denominated international securities issued by nonresidents came to 29% at mid-year; this compares with 44% and 13% for the U.S. dollar and the Japanese

yen, respectively. The euro's role in foreign exchange markets is smaller, with the euro accounting for about one fifth of global spot trading. About half of the euro area's external trade is already conducted using the euro. The share of euro in official holdings of foreign exchange reserves has stagnated at 13% since 1999 (U.S. dollar: 68%, Japanese yen: 5%).

8   The *European Commission* concludes that the 2002 government deficit in Germany is expected to have clearly exceeded the reference value under Article 104 of the Treaty, because the underlying deficit has been rising since the year 2000, because growth in 2001 and 2002 turned out markedly lower than originally projected, because of the impact of the corporate tax reform on tax revenues and because of expenditure overruns, especially in the health care system. Therefore the Commission has asked for a Council recommendation to Germany urging the German government to put an end to the present excessive deficit situation by May 21, 2003.

The European Commission also calls for an early warning to France to prevent the prospective occurrence of a 2002 government deficit exceeding the Treaty's reference value of 3% of GDP.

In its document "The Internal Market Ten Years without Frontiers," the *European Commission* notes that along with the steady globalization trend and the introduction of new technologies, the Internal Market established on December 31, 1992, has improved competition and raised efficiency. The Internal Market is now faced with new challenges: ensuring the effective operation of an Internal Market after enlargement in May 2004, and meeting the Lisbon targets.

15   In its Spring Report to the annual Spring European Council on economic and social affairs evaluating the implementation of the Broad Economic Policy Guidelines (BEPGs) in 2002, the *European Commission* focuses on the progress towards reaching the objective agreed in Lisbon in 2000 of becoming the most competitive and dynamic knowledge-based economy in the world. The European Commission notes that moderate progress has been made and calls on the Member States to foster structural change, above all on the labor markets and of social systems, to focus more on promoting future-oriented technology, training and education, and calls on more competition and reform in the energy, financial, transport and services sectors and public services contracts.

20   The *Eurogroup* supports the recommendation aiming at the reduction of the general government deficit by German government and the early warning the European Commission issued to France.

21   After a lengthy discussion, the *Ecofin Council* reaches political agreement on the tax package (retention and withholding tax, postponement of the discussion on a draft directive on a Community framework for the taxation of energy products and on a draft regulation which would strengthen cooperation between Member States' tax authorities to combat fraud relating to value added tax).

The EU finance ministers agreed that 12 Member States are due to implement automatic exchange of information concerning interest

income derived from savings in another Member State from January 1, 2004.

Austria, Belgium and Luxembourg will for the time being retain banking secrecy and apply a withholding tax on savings held by residents of other Member States (15% from January 1, 2004, 20% from January 1, 2007 and 35% from January 1, 2010) and share the revenue with the country of residence (handing over 75% and keeping 25%).

Switzerland will also retain banking secrecy and will apply the same rates of retention and withholding tax as Belgium, Luxembourg and Austria. Switzerland will share the revenue of the retention tax and will accept the 75/25 division applied within the Community. Austria, Belgium and Luxembourg will implement an automatic exchange of information if and when the EC enters into an agreement by unanimity in the Council with Switzerland, Liechtenstein, San Marino, Monaco and Andorra to exchange information upon request and if and when the Council agrees by unanimity that the U.S.A. is committed to exchange of information upon request as defined in the 2002 OECD Agreement.

The *15 EU ministers of finance* also debate the implementation of the Stability and Growth Pact by examining the updated Stability and Convergence Programmes of Germany, Greece, France, Italy, Sweden and Finland for 2002 to 2006.

On Germany, whose deficit the Federal Statistical Office projects to come to 3.75% of GDP for 2002, clearly higher than the 3% limit, the Ecofin Council decides that an excessive deficit exists in Germany according to Article 104 (6) of the Treaty and issues a recommendation to Germany according to Article 104 (7) of the Treaty to put an end to the excessive deficit situation as rapidly as possible.

On France, the Ecofin Council adopts a recommendation in line with Article 99 (4) of the Treaty with a view to giving an early warning to France to prevent the occurrence of an excessive deficit.

On Italy, the EU ministers of finance criticize the lack of information on the additional measures foreseen to achieve the budgetary targets beyond 2003 to prevent an excessive deficit in 2004.

20/21 The plenary session of the *European Convention* for the first time deals with the effect of the increase in the number of Member States following the forthcoming enlargement on the functioning of the institutions. There is consensus on the need to retain the three institutions European Parliament, European Council and European Commission and to make them more efficient. A majority of the convention members favors a mixed system for the future institutional structure combining both federal (dual chamber, joint responsibilities) and confederal elements (continuation of the status quo). The role and presidency of the European Council and its relationship with the European Commission need to be defined more clearly in the Constitutional Treaty. The German and French proposal to introduce a European Foreign Affairs Minister meets with a positive echo.

21   The *European Commission* proposes that Austria phase out state guarantees granted by regional or local authorities to state mortgage banks and some savings banks as a form of state aid.

23   The *European Central Bank* decides to implement measures to improve the operational framework for monetary policy. The maturity of the main refinancing operations will be shortened from two weeks to one week. Moreover, the timing of the reserve maintenance period will be changed to start on the settlement day of the main refinancing operation following the first Governing Council meeting every month. These two measures are designed to remove expectations of interest rate changes during any particular maintenance period and to ensure that the reserve maintenance period always starts on a TARGET operating day. They will come into effect during the first quarter of 2004.

28   The *European Commission* adopts the Second Progress Report on economic and social cohesion, which is an update on the state of Europe's regions. The report confirms that there will be an unprecedented widening of economic disparities within the Union, that a geographical shift in the pattern of disparities will take place, and that the EU will face a less advantageous employment situation, but also that the economic potential of an enlarged EU will be enhanced. Only long-term measures will reduce the gaps, with the resources to be allocated to cohesion policy remaining focused on the least developed regions, above all the new Member States' regions.

Set up on initiative of the *European Commission* and the *European Central Bank,* the Euro Cash User Group meets for the first time. The Euro Cash User Group meetings are to be hosted and chaired alternately by the ECB and the Commission and will take place two to three times a year, alternately in Brussels and Frankfurt. This new group is designed to continue the dialogue of the Commission with its consultative groups on issues related to euro cash and is to establish a forum for discussion and information-sharing on all euro cash related issues among the banking sector, the vending industry, representatives of retailers, cash in transit companies, small and medium-sized enterprises and consumers as well as experts from the Mint Directors Working Group.

29   In the new annual economic report, *German government* officials have scaled back the forecast for GDP growth in 2003 from 1.5% as stated in the December 2002 stability program to 1%.

Economic Background

1 Overview

After GDP growth had sharply decreased in 2001 with Austrian output even shrinking in the second half of 2001, economic activity temporarily received fresh stimulus at the beginning of 2002 as the contribution of net exports to GDP growth turned positive. In line with tendencies throughout Europe, the upturn in the first half of 2002 failed to stimulate domestic demand, however. According to the latest forecasts of the OeNB, the Austrian Institute of Economic Research (WIFO) and the Institute for Advanced Studies (IHS), real GDP growth will again have been slightly below 1% in 2002. The unfavorable international economic situation – particularly in Germany, Austria's most important trading partner – and the extremely high level of uncertainty concerning future economic developments resulted in enterprises substantially cutting their investment plans and households reducing consumption. Govern-ment consumption did not significantly stimulate growth either due to the austerity measures implemented within the framework of budget consolidation.

Gerhard Fenz,
Martin Schneider,
Martin Spitzer

Editorial close:
March 17, 2003

Table 1

Overview of Key Economic Indicators

	3rd quarter 2002	2nd quarter 2002	1st quarter 2002	3rd quarter 2002	2nd quarter 2002	1st quarter 2002	2001	2000	1999	1998	1997
	on previous year in %			*on previous period in %, SA trend*			*on previous year in %*				
National accounts											
Gross domestic product, in real terms	0.9	1.0	0.4	−0.1	0.1	0.5	0.7	3.5	2.7	3.9	1.6
Total exports, in real terms	2.4	1.7	−0.6	0.7	0.3	0.1	7.4	13.4	8.5	8.1	12.4
Total gross capital formation, in real terms	−5.8	−2.8	−8.5	−1.5	−1.4	−1.4	−4.0	2.9	4.2	4.0	3.1
Total imports, in real terms	−2.3	0.0	−2.6	0.2	−0.5	−0.9	5.9	11.6	9.0	5.7	12.0
Total government consumption, in real terms	1.6	1.2	1.5	0.5	0.4	0.4	−0.5	0.0	3.1	2.8	− 1.5
Total consumer spending, in real terms	0.9	0.3	0.9	0.1	0.1	0.1	1.5	3.3	2.3	2.7	1.7

	February 2003	January 2003	December 2002	November 2002	October 2002	September 2002	4th quarter 2002	3rd quarter 2002	2002	2001	2000
	on previous year in %										
Monthly indicators											
Total production sector, ÖNACE[1] sections C-F, industrial output, NSA, 1995=100	−	−	− 1.47	0.6	− 1.4	0.6	− 0.8	− 0.4	0.0	0.3	6.9
Production sector, section: manufacturing, ÖNACE[1] D, Index, NSA, 1995=100	−	−	2.35	1.7	− 0.8	2.7	1.0	0.6	0.1	0.5	9.9
Total trade − sales, in real terms	−	−	2.53	− 1.5	4.2	6.1	1.7	3.0	1.1	− 2.8	2.7
Automotive trade, automotive repairs, gas stations − sales, in real terms	−	−	5.86	− 8.6	2.8	4.2	− 0.4	− 2.2	− 3.5	− 2.1	− 2.1
HICP − overall index	−	1.67	1.67	1.7	1.7	1.6	1.7	1.7	1.7	2.3	2.0
	Index										
Economic Sentiment Indicator (SA)	98.60	98.20	98.20	98.2	98.4	98.0	98.3	97.9	98.1	98.3	99.3
	in % of labor supply										
Unemployment rate, according to microcensus (EU definition), months, SA	4.10	4.10	4.10	4.1	4.1	4.2	4.1	4.2	4.1	3.6	3.6
Unemployment rate (national definition), total, SA	−	6.60	7.20	6.8	6.9	7.0	7.0	7.0	6.9	6.1	5.8

Source: OeNB.
[1] *ÖNACE = Austrian Statistical Classification of Economic Activities.*

A look at the confidence indicators reveals that an upturn cannot yet be expected for the near future. Although the indicators surveyed by the European Commission have slightly improved recently, the general tendency remains largely the same. For the first time in a rather long period, the Economic Sentiment Indicator rose again, climbing 0.4 to 98.6 points in February 2003. The findings of the WIFO Economic Surveys of the first quarter 2003 indicate a continued decline in economic activity. Moreover, the development of sales price expectations, the assessment of order volumes, the assessment of inventories and production expectations point to a deterioration of the economic situation.

In line with the economic decline, the upward trend of prices clearly decelerated in 2002, to a full-year result of 1.7% (2001: 2.3%). Inflation peaked in August at 2.1%, but subsequently declined to likewise 1.7% in December. With an average increase of 2.4% in 2002 year on year, standard wage rates were significantly higher than the Consumer Price Index for the first time since 1999. In January 2003 the nominal wage increase dropped to 2.2%.

Due to the economic slump, the Austrian labor market situation is expected to remain gloomy in 2003. In January 2003 the number of unemployed persons rose for the twenty-first month in a row. According to the national definition, the seasonally adjusted unemployment rate amounted to 6.6% in January 2003 and, therefore, was 0.3% below the average of 2002. According to the EU definition, the unemployment rate was at 4.1% in January 2003 and was thus at the average level of the previous year. Unemployment figures at comparably high levels were last reported at the end of 1998.

2 Industrial Output Continues to Stagnate

Mainly due to high levels in the second quarter of 2002, industrial output in Austria increased by 0.6% in the first half of 2002 compared with the same period in the previous year. However, in the second half of 2002 industrial output again dropped by 0.6% and thus remains in a phase of stagnation that has been observed since the second quarter of 2001. With a decrease of 0.8%, growth was particularly flat in the fourth quarter of 2002. Altogether, industrial output in 2002 remained at the previous year's level.

An analysis of the development of the individual economic sectors and by categories of use reveals that this bad result is mainly due to the decline in building construction (–3.2%) and in the output of durable consumer goods (–7.3%). Manufacturing output grew by 0.1% in 2002 and was thus only slightly above the previous year's figure. Output in the construction industry decreased by 0.8%. The output of nondurable consumer goods, however, rose by 1.2%. While the currently available data do not conclusively suggest that output growth will expand in the near future, the slight acceleration recorded in manufacturing output – which is the key pillar of industrial output – since August 2002 bodes well; this improvement is mainly due to an increase in the field of nondurable consumer goods. The manufacturing of durable consumer goods, however, has continuously decreased over the past few months. In December 2002 it dropped 11.7%, which is the fifth two-digit monthly decrease in a row. Also, the output decline in the construction industry (notably building construction), which is the second important manufacturing sector,

does not seem to be coming to an end in the foreseeable future. The building construction industry has been especially affected by the current slowdown in economic activity because two phenomena – the cutting of overcapacities on the one hand, and low domestic demand on the other – have seriously dampened construction output. Except for an interim high in April 2002, building construction output has been continuously declining. The year-on-year drop of 13.0% in December 2002 was the strongest decline since output indices have been computed. As opposed to this, civil engineering has been recording significant growth rates for quite some time. In the fourth quarter of 2002 civil engineering output grew by 12.3% year on year.

In the field of trade, the impact of the weak development of domestic demand in early 2002 was partially compensated for in the second half of the year. Trade sales in real terms rose by a total of 1.1% in 2002. All trade categories except for the automotive trade industry generated positive growth rates in the second half compared with the previous year. In December 2002 retail trade grew by 0.9%. The automotive sector, which suffered heavy losses in the first quarters of 2002 (first half of 2002: –5.5%), has apparently started to recover, judging from the smaller losses reported in the second half of the year (–1.3%). While the automotive market thus seems to have started stabilizing, the full-year result for 2002 was nonetheless a decline of 3.5%.

3 Growth Underpinned by Net Exports, Domestic Demand is Slack

After a clear slowdown of GDP growth in 2001 and an output decline in the second half of 2001, economic activity revived at the beginning of 2002. In line with tendencies throughout Europe, the upswing observed in the first half of 2002 did not gain momentum in the second half of the year, however. The deterioration in external economic conditions and increased uncertainty concerning the international economic and political situation seem to have prevented the initial upturn led by net exports from filtering through to domestic demand-oriented sectors of the economy. Growth is not expected to accelerate until the second half of 2003. According to the latest forecasts of OeNB, WIFO and IHS, real GDP growth will again have been slightly below 1% in 2002. The decreasing momentum in 2002 is evidenced particularly by the quarterly GDP growth rates. While seasonally adjusted growth on the corresponding periods of 2001 amounted to 0.8% and 0.4%, respectively, in the first two quarters of 2002, it dropped to 0.1% in the third quarter and was not expected be higher in the fourth quarter. Both international and domestic factors seem to have prevented the growth spurt widely expected for 2002 from actually materializing. The unfavorable international economic situation – particularly in Germany, Austria's most important trading partner – and the extremely high level of uncertainty concerning future economic developments resulted in enterprises substantially cutting their investment plans. This development is reflected in construction investments, which have been declining for six consecutive quarters (except in the second quarter of 2002), and in investment in plant and equipment, which generated declines of 18.8% and 11.2% in the second and third quarters, respectively.

Increased consumer spending, which had substantially underpinned economic activity in the previous years, clearly dropped in 2002, which can be attributed to the low growth in real income and stagnating employment. Government consumption did not significantly stimulate growth either due to austerity measures implemented in the framework of budget consolidation. As in 2001, GDP growth was led by net exports in 2002. However, the positive contribution of net exports to GDP growth can be traced basically to the setback in imports. Exports were increasing, but growth was rather sluggish.

Chart 1

Contribution to Real GDP Growth in Austria

percentage points

Legend:
- Consumer spending
- Government consumption
- Gross capital formation
- Net exports
- Errors and omissions
- GDP Growth

Source: OeNB, WIFO.
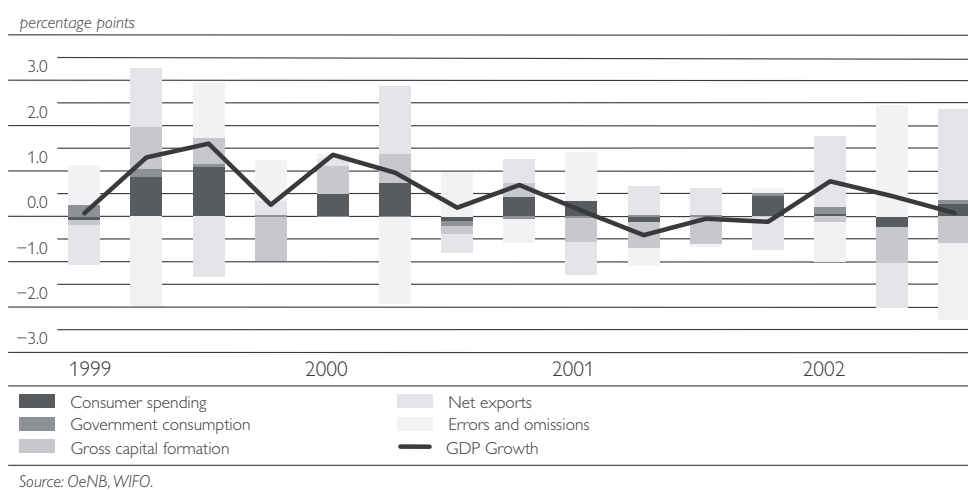
4 Labor Market Situation Remains Gloomy in 2003

As earlier, the Austrian labor market has followed cyclical developments in economic activity with some delay. Since the economic recovery seen in the first half of 2002 did not win momentum as the year progressed, the labor market situation is unlikely to improve at least in the first half of 2003.

At first glance, the employment situation appears to have improved substantially. In January 2003 the number of employed persons amounted to 3,106,953 and was thus almost 40,000 above the figure recorded in January 2002, after having been growing throughout the second half of 2002. However, the employment statistics are strongly distorted by the introduction of child-rearing benefits (or, more precisely, by the extension of entitlement prerequisites) because all recipients of child-rearing benefit payments are recorded among the employed. If the employment figures are adjusted for the number of beneficiaries of child-rearing and parental leave payments, which has been clearly rising since the beginning of 2002, the picture drastically changes: instead of an increase by 15,000 employed persons in December 2002, a decrease of nearly 25,000 persons in regular employment becomes evident (see chart 2). Even judging from the adjusted figures, employment figures have been stagnating at best over the past few months and thus do not hint at a turnaround on the labor market. Although typically reacting very flexibly to changes in demand, labor supply in Austria rose relatively strongly — by more

than 1% – in 2002 despite the low labor demand persisting for more than a year now. The increased number of child-rearing beneficiaries, structural policy measures affecting early retirement, tuition fees and joint insurance (coverage by the national health plan for nonworking childless spouses) as well as increased quota for foreign workers have caused recent labor supply figures to rise more strongly than could be expected given general developments in the employment situation.

Chart 2

Employment in Austria

Changes on the same month of the previous year

Source: Statistics Austria, EUROSTAT.
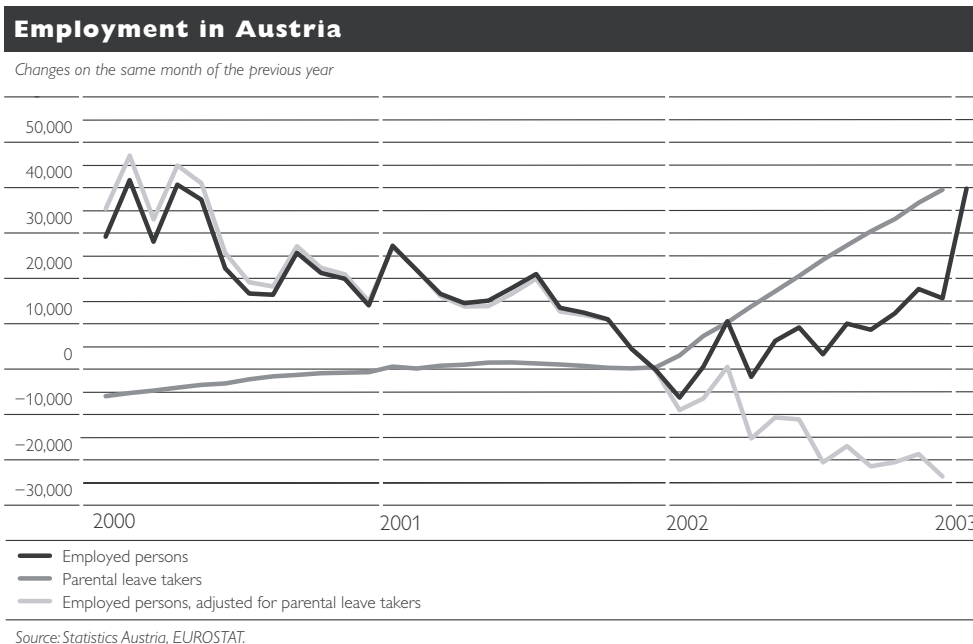
In January 2003 the number of unemployed rose for the twenty-first month in a row. The rise in the number of unemployed persons was, however, declining substantially in the second half of 2002, falling to just below 6,000 persons in January 2003, which indicates that labor demand has started to stabilize. Nevertheless, the unfavorable economic situation in the second half of 2002 might have an adverse impact on employment demand in 2003. According to the national definition, the seasonally adjusted unemployment rate amounted to 7.2% in December 2002 and, therefore, was 0.3% above the average of 2002; according to the EU definition, the unemployment rate came to 4.1% in January 2003 and was thus at the average level of the previous year. Unemployment figures at comparably high levels were last reported at the end of 1998. Apart from the unfavorable economic situation, the increased unemployment rates were mainly due to the relatively strong rise in labor supply.

Men continue to be more heavily affected by unemployment than women. While the number of unemployed men in January 2003 was up 2.9% on the previous year, the number of unemployed women was up only 0.1%. The deterioration of the labor market situation hit in particular the problem groups of young people aged 19 to 25 years and employees older than 55 years. In January 2003 the unemployment rate for these age groups rose by 5.9% and

Labor Market Developments in Austria

Source: Statistics Austria.
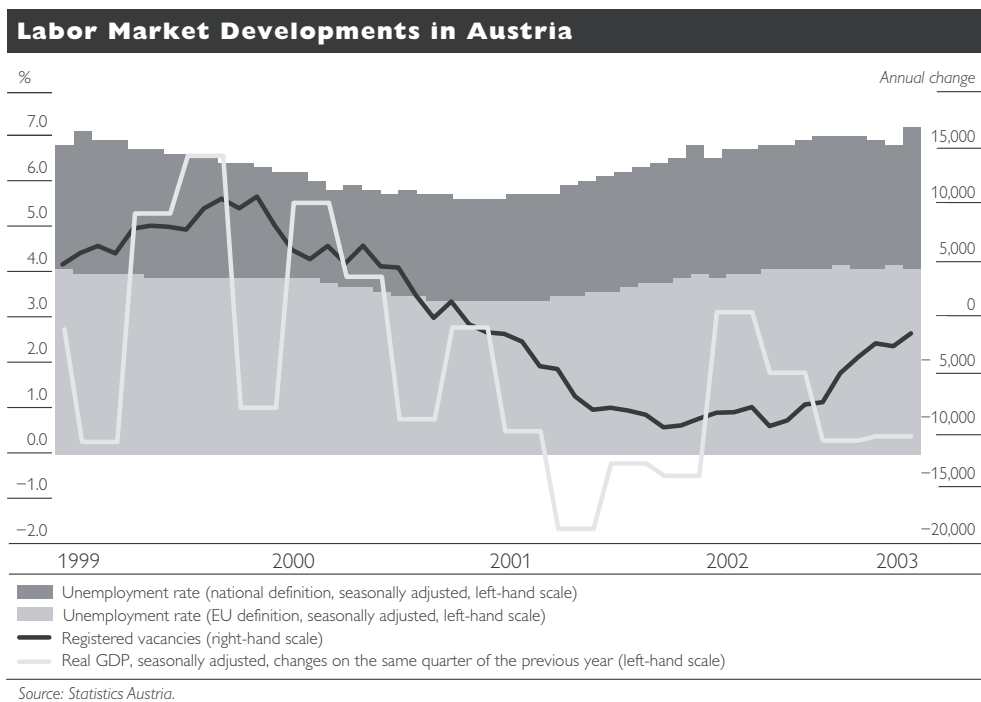
15.1% as compared to January 2002. Furthermore, the unfavorable labor market situation also affected groups of higher qualified and educated people. The number of unemployed among skilled workers and high school and university graduates rose above average, whereas the unemployment rate among persons who have completed compulsory schooling and/or an apprenticeship rose below average.

A look at unemployment figures by sector reveals that the rise in January 2003 was mainly due to increases reported in the manufacturing (+1,915 persons) and other services sectors (+1,719 persons). In the real estate sector, 1,235 persons more than last year were registered as unemployed. In the construction sector the low seems to have been reached; no further increase in the unemployment rate was recorded in the three months to January 2003.

The number of registered vacancies, a figure that is well suited as an indicator for the general employment situation, also reflects the adverse labor market situation. The developments during the year are, however, boding well. While the number of job vacancies in June 2002 was 26.6% or 8,847 jobs below the figure recorded in June 2001, this difference had shrunk to only 5.3% or 1,158 jobs in January 2003. Moreover, the rise in the ratio of registered unemployed to registered vacancies decreased from 62.2% in June 2002 (as compared with June 2001) to 7.6% in January 2003.

5 Falling Imports at a Weak Export Growth Result in Substantial Current Account Improvement

In the course of 2002, the external sector of the Austrian economy was characterized by a decline in imports due to a marked weakness of the domestic economy and sluggish export growth.

While exports increased in the first half of 2002 amid the general economic upswing, growth started slowing as of mid-2002. The most recent data from fall 2002 indicate only a below-average development of exports. From September to November 2002 goods exports in nominal terms were up 4.8% compared with the same period of the previous year. Export activities benefited from higher demand from Germany, whose imports rose slightly in the third quarter of 2002 after four consecutive quarters of decline. The unfavorable economic situation in the euro area and the deterioration of Austria's price competitiveness abroad due to the development of the euro-dollar exchange rate have restrained export growth, however. From September to November 2002, exports to EU Member States augmented by 5.5% (by 5.8% to Germany), while exports to non-EU countries rose by only 3.9%.

Companies' expectations of future export orders, as researched in WIFO's monthly EU Economic Survey, reflect weak export activity. In January 2003, the balance of affirmative and negative responses was –41 points, a reading last recorded during the crisis in Asia in early 1999 and clearly below the long-term average. In February 2003, this balance surprisingly improved to its long-term average of –34 points. The only sector to post a strong increase in export orders in January 2003 was the car industry (+11.3 points). Expectations of export orders are particularly pessimistic in the food and luxury food sectors (–12.3 points). To put these export figures in perspective: imports of goods decreased by 2.4% from January to November 2002, reflecting above all the slump in investment activities.

Based on transaction data, which do not include valuation effects, Austria's current account showed a small deficit of EUR 761 million in the first three quarters of 2002, which constitutes a decrease of EUR 2.8 billion compared with the same period of the previous year. The improvement in the current account was mainly due to the goods subaccount (+EUR 4.3 billion on a year-on-year basis). In the same period, the surplus in the income subaccount also posted an increase (+EUR 1.1 billion), whereas the balance on the transfer subaccount deteriorated by EUR 0.3 billion the balance on the services subaccount even by EUR 2.3 billion. The travel balance decreased only slightly in the first three quarters of 2002.

The improvement of the goods subaccount results primarily from the 3.5% drop of imports in nominal terms due to the weak domestic economy in the first three quarters of 2002, while goods exports rose by 4.2% in nominal terms over the same period. The income subaccount deficit decreased only slightly in this period, thanks mainly to the improvement in the investment income balance from other investments by EUR 0.9 billion. The financial account closed with net outflows of EUR 2.8 billion in the first three quarters of 2002, which constitutes a decrease of EUR 6.0 billion compared with the previous year. The main driving force behind this development was the annual increase in other investments by EUR 5.5 billion.

6 Decreasing Inflation Development

The upward trend of prices clearly decelerated in 2002, to a full-year result of 1.7% (2001: 2.3%). Inflation peaked in August at 2.1%, but subsequently declined to likewise 1.7% in December. The main factor contributing to inflation was the services sector, which is the most important subcomponent of the HICP with a weight of almost 45%. The upward trend in services prices was surprisingly persistent in the course of the year and slowed only toward the end of 2002. Energy prices, typically dominated by the price of crude oil, displayed a different trend. Their contribution to inflation was initially negative, but turned positive in the course of the second half of the year as crude oil prices increased. The development of food prices reflects the fact that increases related to the BSE crisis and the foot-and-mouth disease were dropping out of the calculation. At the beginning of 2002 a supply shortage triggered by unfavorable weather conditions temporarily drove up vegetable prices in particular. In the euro area, HICP inflation rates dropped only in Germany and Belgium in 2002. Regarding the cash changeover, the statistical evidence is that the introduction of euro banknotes and coins in 2002 did not have any significant price effects. In 2003, price developments are expected to be strongly impacted by the further evolution of the euro-dollar exchange rate and crude oil prices.

Inflation measured by the HICP amounted to 1.7% in January 2003. The strongest upward price trend was recorded for energy (3.4%), services (2.6%) and processed food, including alcoholic beverages and tobacco (2.3%). A dampening effect on overall price developments was exerted primarily by developments in prices for nonenergy industrial goods (+0.4%) and nonprocessed food items (–2.1%).

Preconsumer prices, which are much more volatile than consumer prices, declined almost throughout 2002. Only toward year-end did wholesale prices start to inch up again – a tendency that continued in January 2003. On average, wholesale prices dropped by 0.4% in 2002. The Producer Price Index followed

Chart 4

HICP Austria: Inflation Rate and Contributions to Inflation

percentage points

Legend:
- Services
- Energy
- Nonenergy industrial goods
- Food
- Overall index

Source: OeNB, Statistics Austria, ECB.
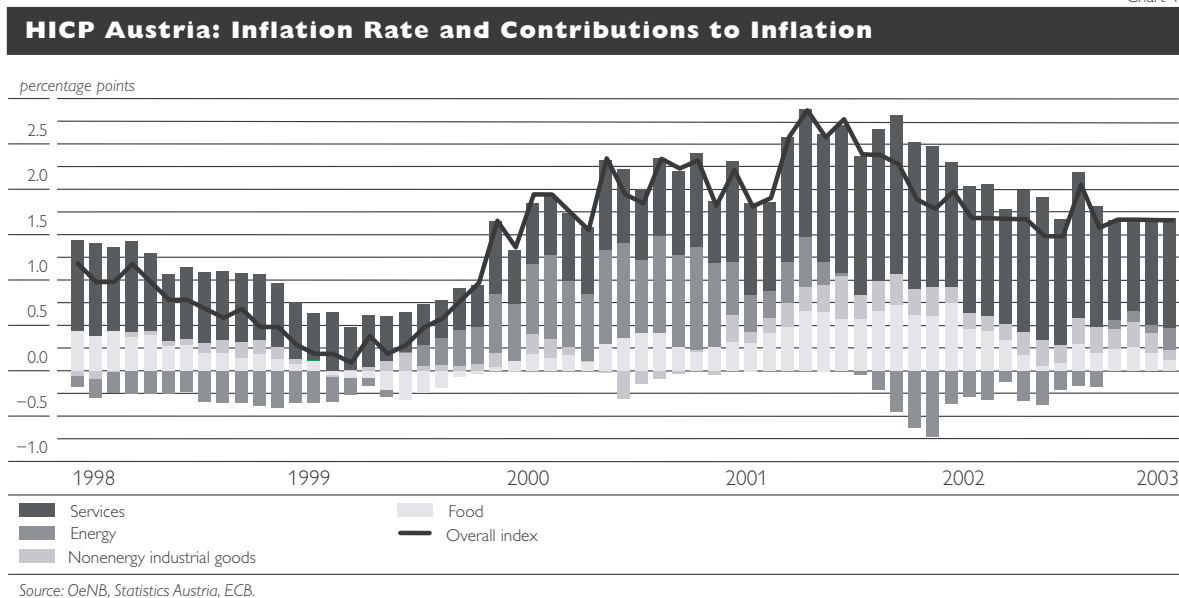
a similar pattern, with the exception that prices were dropping throughout the year. Producer prices declined by 1.2% on average in 2002.

Compared with 2001, standard wage rates rose by an average 2.4% in 2002 and thus remained 0.7% above the level of the Consumer Price Index. In the public sector, the corresponding increase was rather moderate at 1.1% compared with overall wage increases. In January 2003, the increase in nominal wages slowed down to 2.2%, with the increase of standard wage rates in the public sector equaling the overall average. Thus, public sector wages did not grow more slowly than in the rest of the economy for the first time since 1999. The relatively strong increase of real income per employee may be surprising in view of the weak economy, but has to be seen in the light of the losses in real income suffered in 2000 and the first half of 2001. The unit price labor costs in manufacturing output very clearly show that the policy of moderating wages in order to secure international competitiveness was retained. Following an increase caused by the cyclical behavior of productivity growth by 1.8% in 2001, unit labor costs decreased again by 0.7% in 2002 due to the continued policy of moderating wages. The price competitiveness could be improved by 0.7% vis-à-vis Germany and by 0.8% vis-à-vis external trading partners in general.

Chart 5

Wage and Price Development in Austria

Change on the same month of the previous year in %

Wholesale prices
Harmonized Index of Consumer Prices
Consumer Price Index
Producer Price Index
Standard wage rate index – overall index

Source: Statistics Austria, ECB.
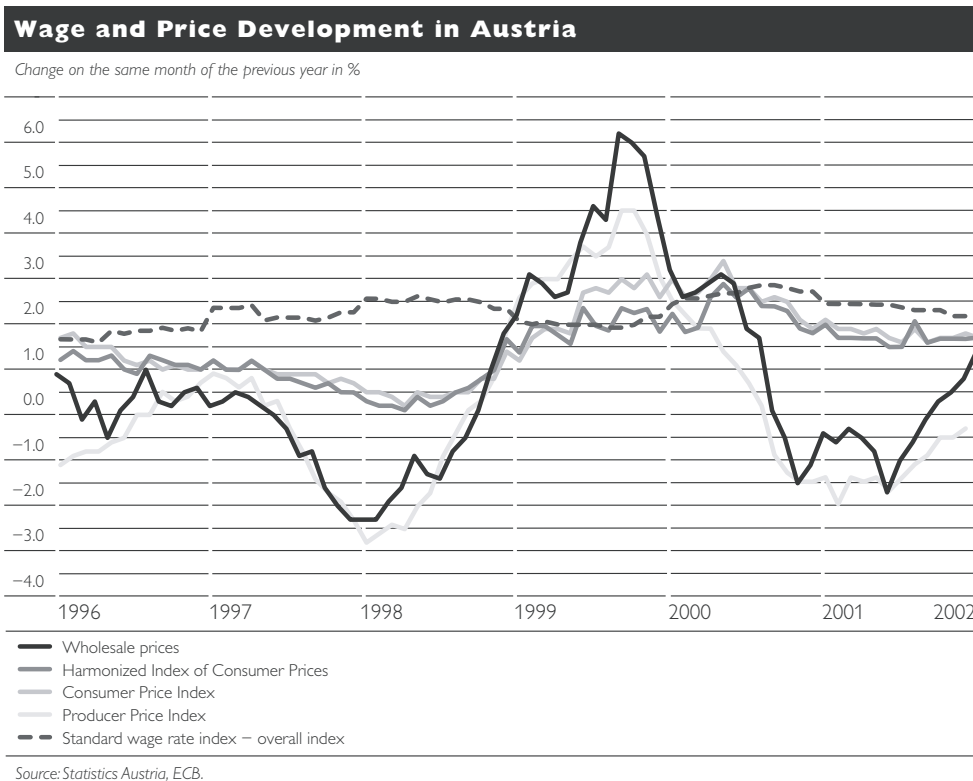
Due to higher crude oil prices, energy prices can be expected to rise in 2003. This increase is compensated for by the decelerating upward trend in prices in the services sector and the low pressure on prices caused by demand, which will enable HICP inflation to stabilize at the current level.

7 Confidence Indicators Do Not Hint at Turnaround

For the past few months, the economic climate in Austria can be characterized as relatively stable at a low level. The indicators surveyed by the European Commission have slightly improved recently but the general tendency remains largely the same. For the first time in a rather long period, the Economic Sentiment Indicator rose again, climbing 0.4 to 98.6 points in February 2003. However, this figure is still below the average recorded in the previous years. Austrian consumers have become somewhat more pessimistic about the economic situation than recently; their current assessments are even slightly below the 2002 average. This pessimism among consumers is, in turn, reflected in the retail sector's confidence indicators. Although retail confidence recovered from its historical low in January 2003, it is still very low. Industry confidence has grown slightly but is still weak. Austrian construction companies, by contrast, have become much more optimistic about the economic situation than most recently. The indicator of construction confidence is slightly above its long-term average and has sizably improved over the past few months. Many construction companies expect the decline of overcapacities to be coming to an end. Moreover, intensified public investment activities and the reconstruction activities in the wake of the flooding that occurred in August 2002 seem to have helped improve overall confidence. Among services providers confidence remains, nonetheless, relatively low.

The industrial sector expects more orders for the next months than most recently. The balance on order expectations increased to –28 points in February and is thus nearly 10 points above the average in 2002, with expectations for orders from abroad slightly trailing the improvement in overall expectations.

Chart 6

Development of Confidence Indicators

Change against previous period, seasonally adjusted

Services – confidence indicator, seasonally adjusted
Industrial confidence, seasonally adjusted
Consumer confidence, seasonally adjusted
Retail trade – confidence indicator, seasonally adjusted
Construction – confidence indicator, seasonally adjusted
Economic Sentiment Indicator, seasonally adjusted (right-hand scale)

Source: European Commission.

Expectations concerning industrial output in the next few months also improved slightly in February 2003, but as yet do not unambiguously imply an increase in economic activity. In February 2003 the balance of affirmative and negative responses was — at 7 points (January: 4 points) — slightly above the long-term average and also above the average in 2002.

However, the more recent findings of the WIFO Economic Surveys for the first quarter of 2003 suggest that economic activity may actually continue to slow down. Specifically, changes in the assessment of order volumes, sales price expectations, the assessment of inventory and production expectations point towards a deterioration of the economic situation. On a positive note, the assessment of capacity utilization — based on seasonally adjusted data — has improved compared with the fourth quarter of 2002. Moreover, the findings of the survey of construction companies within the framework of the quarterly WIFO Economic Surveys in the first quarter of 2003 suggest that the crisis in the construction industry may be coming to an end. The assessment concerning the development of business activity and order volumes was slightly more optimistic in the fourth quarter of 2002 than it was in the previous quarters, whereas the assessment of construction price expectations has deteriorated.

Money and Credit in 2002

Ralf Dobringer,
Margarita
Schandl-Greyer

Decline in Total Assets

After an already highly difficult year 2001, 2002 turned out to be even more challenging for banks operating in Austria, largely because international economic conditions continued to be tight. Banks thus had to further downgrade their profit expectations, and even total assets decreased: After a growth of EUR 25.04 billion or 4.5% in 2001, 2002 was the first year to record a full-year decline in total assets (by EUR 14.47 billion or 2.5%) since the start of electronic reporting in 1978. But this unusual decrease can largely be traced to restructuring measures following the integration of Bank Austria AG (BA) with the Bavarian Hypo- und Vereinsbank (HVB) and the ensuing merger of BA with Creditanstalt AG (CA). Without CA and BA, total asset growth would actually have amounted to roughly +3%.

Asset Growth of Domestic Banks

Annual change in %   *EUR billion*

Annual change (left-hand scale)
Total assets (right-hand scale)

Source: OeNB.
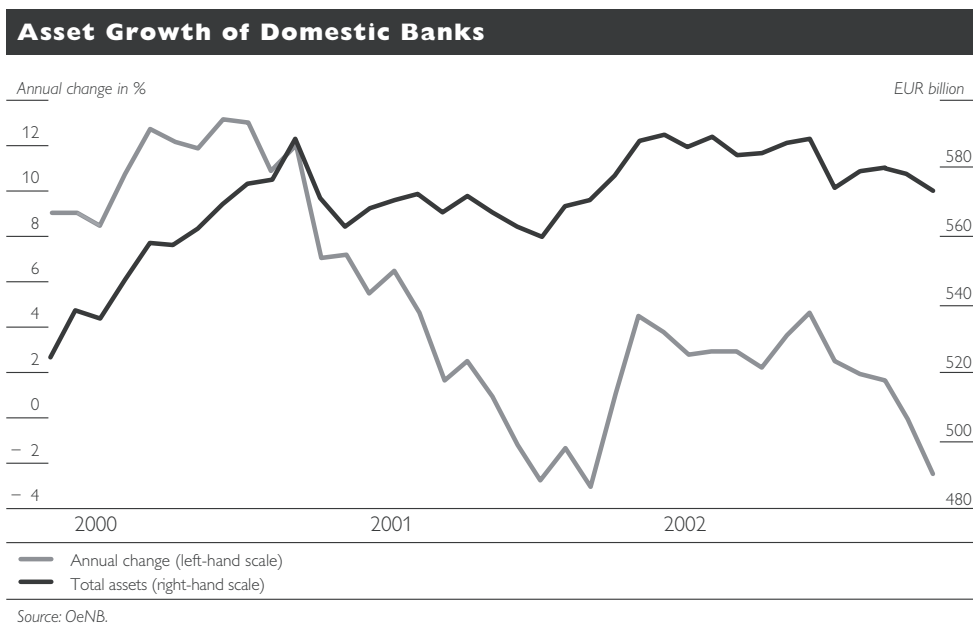
    As CA was a joint stock bank, this sector's total assets shrank by EUR 37.33 billion or 28.9%, whereas the savings bank sector (with which BA is affiliated) boasted an increase by EUR 11.56 billion or 5.7%. State mortgage banks and Raiffeisen credit cooperatives also reported substantial asset growth at 12.9% and 4.4%, respectively, followed by special purpose banks at 2.4% and Volksbank credit cooperatives at 1.5%. Besides joint stock banks, building and loan associations posted a drop in total assets by 1.8%.

    The market share of the five largest independent banks in total assets inched up 0.4 percentage point to 45.9% against December 2001.

Number of Banks Continues to Fall

Of all banks subject to reporting requirements in Austria, the number of head offices fell by 10 to 897 in 2002, while that of branch offices sank by 75 to 4,471.

Number of Banking Offices in Austria

	Joint stock banks and private banks		Savings banks		State mortgage banks		Raiffeisen credit cooperatives		Volksbank credit cooperatives		Building and loan associations		Special purpose banks		Total		Total number of head offices and branch offices
	H	B	H	B	H	B	H	B	H	B	H	B	H	B	H	B	
December 31, 2001	61	738	67	1,380	9	164	617	1,725	70	475	5	59	78	5	907	4,546	5,453
December 31, 2002	59	534	64	1,509	9	165	609	1,719	70	481	5	59	81	4	897	4,471	5,368
Change[1])	−2	−204	−3	129	−	1	−8	−6	−	6	−	−	3	−1	−10	−75	−85

Source: OeNB.
H = Head offices.
B = Branch offices and bureaux de change.
[1]) Changes are traceable to new offices, closing of offices and mergers.

Loan Growth Deteriorated Markedly against 2001

Whereas loan growth had still come to EUR 7.92 billion or 3.5% in 2001, it sank to nearly one third of this level in 2002 at EUR 2.72 billion or 1.2%. In the fourth quarter of 2002, interest payments on loans credited ran to EUR 2.77 billion, that is a rise by EUR 0.31 billion or 12.6% year on year, despite the further slowdown of average interest rates for euro-denominated loans against December 2001.[1]) In 2002, loan growth was largely carried by foreign currency loans, which accounted for EUR 2.06 billion or more than 75% of the overall increase. Relatively speaking, foreign currency loans gained 4.9%, after 7.2% or EUR 2.83 billion in 2001. Euro-denominated loans lost some of their attractiveness again: They almost stagnated at +EUR 0.66 billion or +0.3% in 2002 in comparison with +EUR 5.09 billion or +2.7% in the like 2001 period. The absolute increase of foreign currency loans thus exceeded that of euro-denominated loans again for the first time in two years.

Loans to Domestic Nonbanks

Annual change in EUR billion

Euro
Foreign currency
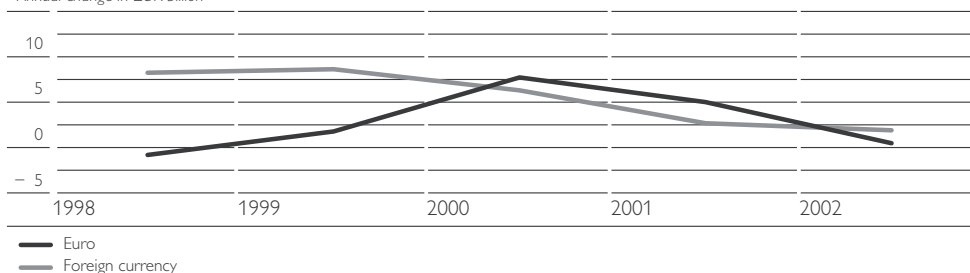
Source: OeNB.

As a consequence, the share of foreign currency loans in banks' lending portfolios went up by 0.6 percentage point to 18.8% year on year.

In a sectoral breakdown, Volksbank credit cooperatives engaged most strongly in foreign currency loans with a share of 24.9% in overall loans. At the end of December 2002, savings banks had the second largest share in foreign

---

1   Against December 2001, the average interest rate charged on loans to households thus diminished by 0.38 percentage point to 6.51%.

currency loans at 21.7%, followed by joint stock banks at 20.9% and Raiffeisen credit cooperatives at 17.8%. Special purpose banks had the lowest share at 3.7%. Building and loan associations are, incidentally, not allowed to extend foreign currency loans.

In a regional breakdown, the share of foreign currency loans in total loans was highest in Vorarlberg[1]) at roughly 44%. Some banks in Vorarlberg and the Tyrol even recorded a share between 60% and 70%.

A breakdown by loan size reveals that, at year-end 2002, loans of up the EUR 10,000[2]) accounted for some 71% of total lending, with the average euro-denominated loan size running to EUR 32,000. By contrast, the majority of foreign currency loans (32.1%) amounted to between EUR 100,000 and EUR 500,000; their average size came to EUR 148,000.

Loans Denominated in Swiss Francs Remain Highly Popular

Lending in Swiss francs[3]) again boomed in 2002, after having been outpaced by Japanese yen-denominated loans in the years before. In 2002, the share of Swiss franc-denominated loans in total foreign currency loans jumped up by 4.6 percentage points to 54.9%, whereas Japanese yen-denominated loans retreated for the first time since the launch of the Economic and Monetary Union from 41.9% in December 2001 to 37.2% in December 2002. This revival of the Swiss franc may be traceable to both the attractive exchange rate and the favorable yield differential to the euro. Lending in U.S. dollars has, for years, been stagnating at a share of 6% to 7%.

Foreign Currency Loan Structure

EUR billion

Swiss franc
Japanese yen
U.S. dollar
Other currencies

Source: OeNB.
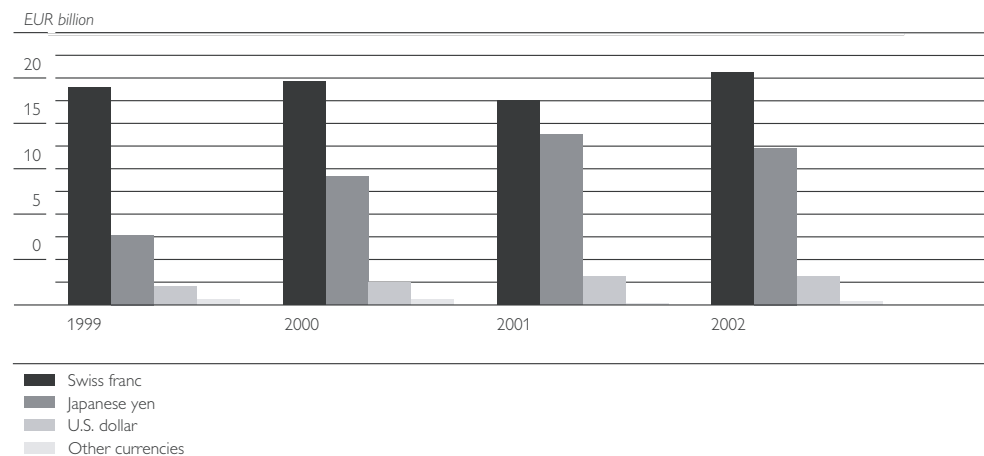
Across economic sectors, nonfinancial corporations continued to account for more than half of the total loan volume. In 2002, they borrowed less (–EUR 2.31 billion or –1.8%), mainly because they invested less amid the adverse

1 *The conclusiveness of comparisons between provinces is limited, however, as supraregionally operating banks are always allocated to the head office location (BA-CA is, for instance, allocated to the province of Vienna).*
2 *Including overdrafts on current accounts.*
3 *The data on the currency breakdown are taken from banking data compiled as input to euro area aggregates.*

economic conditions, but their share of foreign currency loans remained unchanged at 19.2% from the like period of 2001. Households, by contrast, accounted for some 28% of total loans and expanded their borrowing by EUR 4.14 billion or 6.6% in 2002, after a rise by EUR 3.58 billion or 6.1% in 2001. Foreign currency loans accounted for 25.0% of overall household borrowing, against 23.2% in December 2001. Lending to the government sector has, for years, been stagnating at about EUR 28 billion, as the government increasingly employs other forms of refinancing, including "Bundesschätze" (federal Treasury bills available only on the Internet) as of late. The government's share of foreign currency loans merely ran to some 5%.

Share of Foreign Currency Loans

% of total loans

Legend:
- General government sector
- Nonfinancial corporations
- Households

Source: OeNB.
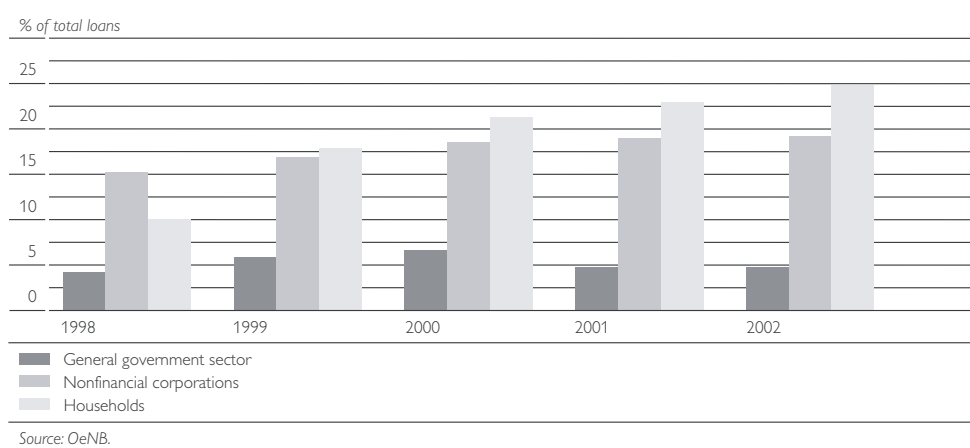
As in 2001, the share of home and home improvement loans picked up much faster in 2002 at EUR 2.48 billion or 5.7% than total loans at +1.2%. The share of foreign currency loans in total home and home improvement loans augmented to 17.8%, thus inching closer to the share of foreign currency loans in overall lending (18.8%). Against December 2001, the average interest rate for home loans decreased by 0.33 percentage point to 5.28%.

Securitized Loans

In 2002, total securitized loans contracted by EUR 1.89 billion or 8.8%, compared with –EUR 3.0 billion or –12.3% in 2001. This decline was chiefly attributable to the subposition public sector debt instruments (other than federal Treasury bills and notes) eligible for central bank refinancing and posted a decline by EUR 2.04 billion or 13.4%.

Deposit Growth Down Against 2001

After extraordinary additions to domestic nonbanks' deposits in 2001 of EUR 13.77 billion or 7.8%, growth slowed down to EUR 2.11 billion or 1.1% in 2002. Apart from savings banks, which generated the highest deposit growth of EUR 10.07 billion or 18.2% as a result of reclassifications owing to mergers, Volksbank credit cooperatives boasted an above-average rise in deposits at EUR 0.51 billion or 4.4%, followed by Raiffeisen credit cooperatives at +EUR 1.93

billion or +4.1%. By contrast, building and loan associations posted a drop in deposits by EUR 0.16 billion or 1.0%.

A breakdown by deposit category shows that demand deposits augmented by EUR 3.19 billion or 8.2%, after a similar rise by 8.3% in December 2001. By contrast, time deposits, which had still posted a rise by EUR 5.07 billion or 25.1% in 2001, shrank by EUR 3.28 billion or 13.0% in 2002. In 2002, savings deposits (including interest income of EUR 2.76 billion) merely climbed EUR 2.21 billion or 1.8%, which means that without interest income, savings deposits would have contracted by EUR 0.55 billion. In 2001, savings deposits had still increased by EUR 5.73 billion or 4.8%, with capitalized interest on deposits in the amount of EUR 3.12 billion.

Savings Deposits and Mutual Fund Assets

Annual change in %

Source: OeNB, VÖIG.
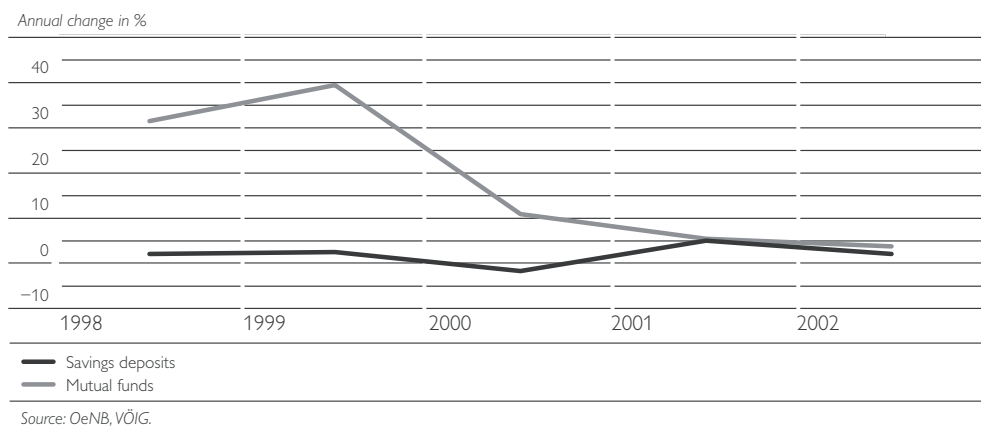
Also the asset growth of mutual funds managed by domestic investment companies[1]) slowed down to 3.4% in 2002, after 5.0% in 2001.

The half-year statistics on the number and size of deposit accounts reveal that over 96% of the 23.69 million deposit accounts hold amounts of less than EUR 20,000.[2]) In addition, there were 921 savings passbooks with amounts between EUR 1 million and EUR 3 million and 152 passbooks with over EUR 3 million.

Direct Domestic Issues

The direct domestic issues of banks operating in Austria decreased by EUR 0.34 billion or 0.6% in the full year 2002. In 2001, this position had still augmented by EUR 2.2 billion or 4.2%. By direct issue category, debt securities picked up by EUR 1.96 billion or 7.9%, whereas other forms of securitized lending registered a decline by EUR 1.92 billion or 6.6%.

---

1 Source: Vereinigung österreichischer Investmentgesellschaften (VÖIG).
2 Pursuant to Article 93 of the Austrian Banking Act, amounts of up to EUR 20,000 per depositor must be covered by deposit insurance.

External Business Losing Strength

Both on the assets and the liabilities side, external business deteriorated in 2002: External assets sank by EUR 1.03 billion or 0.7%, external liabilities by as much as EUR 10.10 billion or 5.8%. Especially business with foreign banks posted sharp reductions, with assets decreasing by EUR 6.97 billion or 8.5% and liabilities even by EUR 14.82 billion or 17.6%. On the liabilities side, foreign securitized lending was the only relevant position to register an increase by EUR 5.95 billion or 11.3%. The downtrend in external business may also be attributable to a shift in external transactions to the ever growing number of subsidiaries established abroad by Austrian banks.

External Business of Domestic Banks

% of total assets

Source: OeNB.
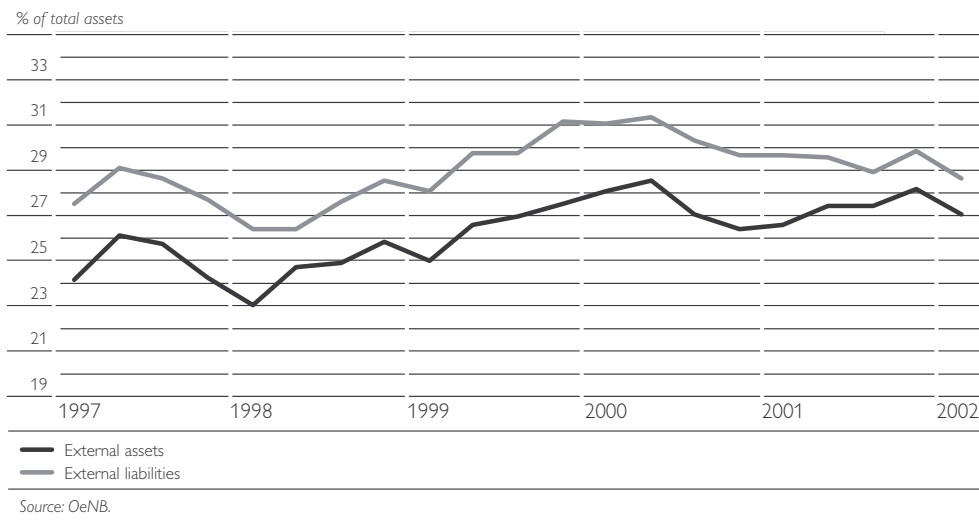
Great Momentum of Derivatives Transactions

Derivatives transactions continued to boom in 2002 at +EUR 278.25 billion or +25.1%, thus driving the ratio of special off-balance sheet financial operations to the total assets of Austrian banks close to an unprecedented ratio of 2.5. Interest rate contracts had by far the largest share in derivatives transactions at EUR 1.14 billion or 82% of total volumes. Trading in derivative interest rate instruments has been expanding continuously since 1999, reflecting the growing importance of interest rate swaps for managing both active and passive portfolios and for controlling interest rate risk.

Special Off-Balance-Sheet Transactions

% of total assets
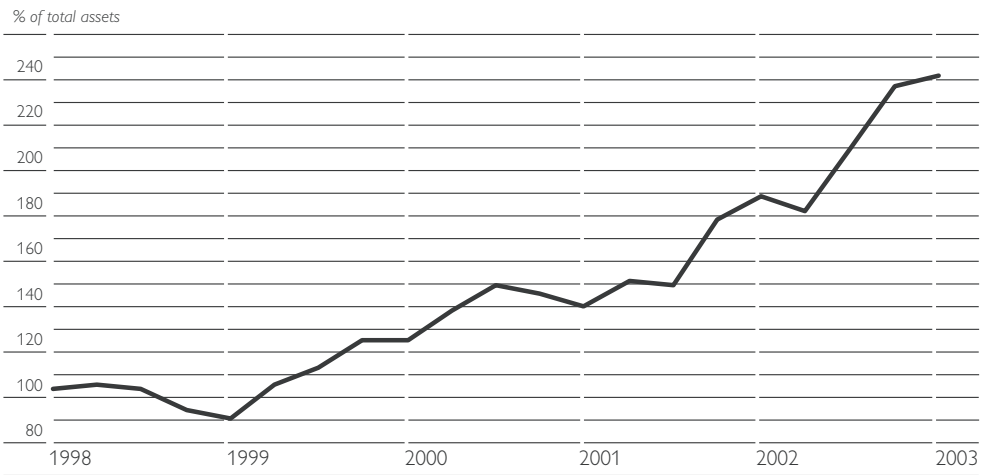
Source: OeNB.

Banks' Capital Base Going Down

For the first time since the Basel Capital Accord entered into force in 1994, the capital base of banks operating in Austria shrank at year-end in 2002. Whereas the capital base had still risen by EUR 4.55 billion or 12.1% in 2001, it declined by EUR 0.43 billion or 1.0% in 2002.

Banks' Own Capital

% of assessment base
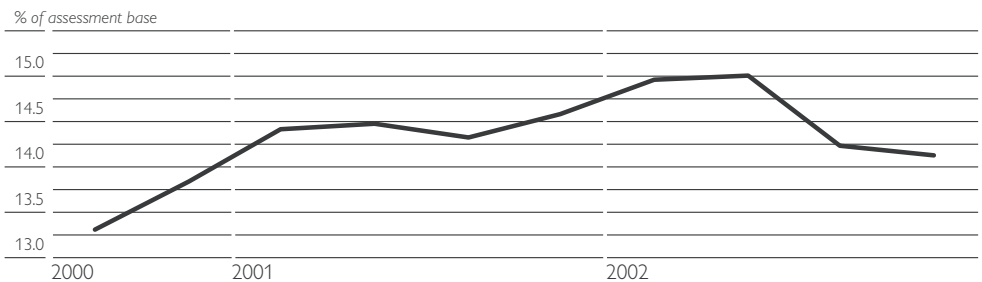
Source: OeNB.

Tier I capital also sank by 0.4 percentage point to 9.1%. Hence, risk weighted assets as a percentage of total assets went up by 1.5 percentage points to 45.8% against December 2001.

Operating Profit Deteriorating Further

The 2002 provisional operating profit of banks subject to reporting requirements in Austria ran to EUR 4.22 billion, thus clearly lagging behind the comparable 2001 period by EUR 0.36 billion or 7.9%. The rise in the operating profit of individual sectors – building and loan associations (+38.0%), special purpose banks (+14.5%), Raiffeisen credit cooperatives (+9.7%), state mortgage banks (+6.8%) and Volksbank credit cooperatives (+ 2.1%) – was cancelled out by declines in the sectors affected by the merger between BA and CA, namely joint stock banks and savings banks, whose operating profit narrowed by

30.7% and 18.1%, respectively. The ratio of operating profit to average total assets came to 0.73% at the reporting date, having decreased by 0.08 percentage point compared to the same period in 2001. The ratio of operating profit to the assessment base as stipulated by Article 22 (2) of the Austrian Banking Act[1]) was 1.43% in 2002, down by 0.16 percentage point compared to 2001.

In 2002, banks operating in Austria reported a substantial decline in operating income by EUR 0.34 billion or 2.4% to EUR 13.72 billion. Operating expenses showed a slight increase by EUR 0.02 billion or 0.2% to EUR 9.50 billion. Consequently, the cost/income ratio deteriorated by 1.8 percentage points against 2001, running to 69.3%[2]) at the reporting date.

Cost/Income Ratio

Source: OeNB.
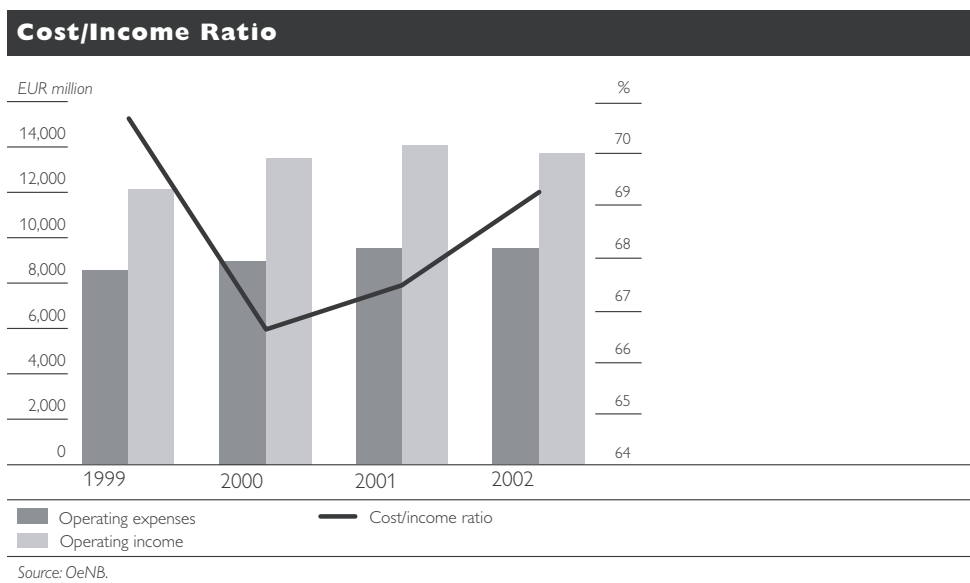
In a sectoral breakdown, we can observe that the cost/income ratio of state mortgage banks (58.1%), special purpose banks (61.8%), Raiffeisen credit cooperatives (64.5%) and Volksbank credit cooperatives (67.6%) was better than the average of all banks operating in Austria. The ratio of joint stock banks (70.2%), savings banks (75.1%) and building and loan associations (80.6%) lagged behind the average in the banking sector.

Set in relation to average total assets, operating income diminished by 0.12 percentage point and operating expenses by 0.03 percentage point. The ratio of operating profit to the assessment base as stipulated by Article 22 (2) of the Austrian Banking Act ran to 4.66% at the reporting date, having diminished by 0.22 percentage point against the same 2001 period.

1   *This ratio is calculated by dividing operating profits by the sum of weighted assets, weighted off-balance-sheet activities and weighted special off-balance-sheet financial operations.*

2   *For each euro banks earn, they spend EUR 0.69.*

Structure of Operating Income

Percentage shares

Other operating income
9.4

Net financial
transactions
4.2

Net fee-based
income
22.0

Net interest income
51.6

Income from securities
and equity interests
12.9
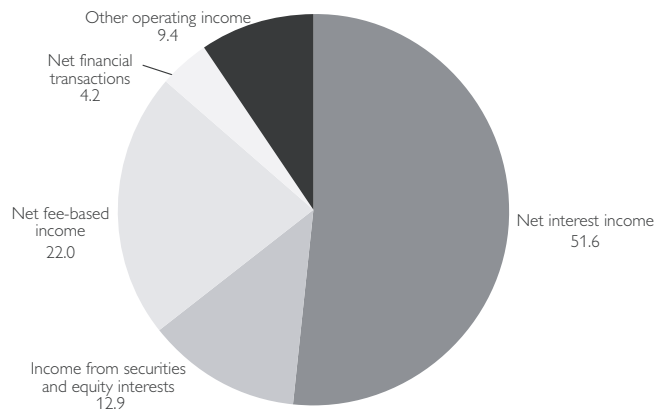
Source: OeNB.

In a sectoral breakdown, an analysis of the structure of operating profit reveals that the share of net interest income in total operating profit came to 69.5% with state mortgage banks, to 59.1% in building and loan associations and to 56.2% with Volksbank credit cooperatives. These sectors thus generated an above-average share of their income from interest rate business. The ratio of fee-based income to total operating income of joint stock banks stood at 24.8%, that of savings banks at 24.5% and that of special purpose banks at 24.1%. These sectors thus generated a relatively high share of total operating income from fee-based income.

Net Interest Income Giving Slightly

At the reporting date, net interest income amounted to EUR 7.08 billion, thus having fallen EUR 0.01 billion or 0.1% behind the figure recorded in the like period in 2001. But the ratio of net interest income to total operating income still increased by 1.2 percentage points, standing at 51.6% at the reporting date. The ratio of net interest income to average total assets came to 1.23%, slightly down against 2001. At EUR 23.43 billion, interest receivable and similar income remained EUR 3.39 billion or 12.6% below the comparable 2001 figures (–EUR 0.69 billion or –2.5% in the year 2001). At the same time, interest payable and similar charges fell by EUR 3.38 billion or 17.1% to EUR 16.35 billion, after a decline by EUR 1.05 billion or 5.0% in 2001. In a sectoral breakdown, we can observe that building and loan associations (+13.0%), special purpose banks (+12.1%), state mortgage banks (+11.1%), Volksbank credit cooperatives (+3.7%) and Raiffeisen credit cooperatives (+2.8%) all raised their net interest income in 2002. Savings banks' surge of net interest income by 17.9% and joint stock banks' plunge of net interest income by 32.9% must be regarded against the backdrop of the BA-CA merger.

Ratio of Net Interest Income to Operating Income

EUR million %

Net interest income
Operating income
Ratio of net interest income to operating income

Source: OeNB.
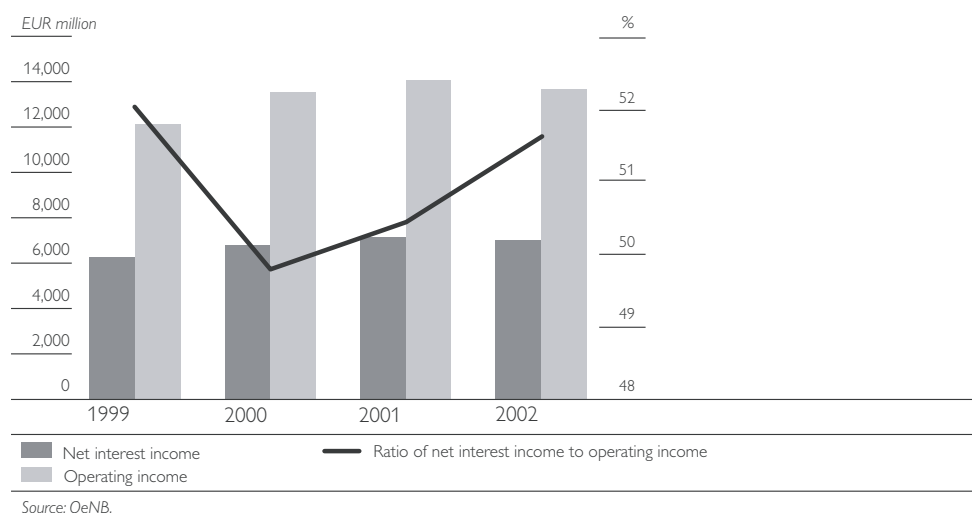
Income from Securities and Equity Interests on the Retreat

Income from securities and participating interests ran to EUR 1.77 billion, thus lagging behind the analogous 2001 period by EUR 0.19 billion or 9.6%. Income from participating interests picked up by EUR 0.14 billion, but declines were recorded for income from equity shares in affiliated enterprises (–EUR 0.30 billion),[1]) and for income on shares and other equity as well as variable rate securities (–EUR 0.03 billion).

Balance on Commissions Down by 1.6%

The balance on commissions stood at EUR 3.01 billion, thus continuing its downward slide and falling EUR 0.05 billion or 1.6% behind the comparable 2001 figure. Whereas fee-based income from lending (+EUR 0.07 billion), payment systems (+EUR 0.06 billion) and services (+EUR 0.03 billion) was going up, fee-based income from securities (–EUR 0.14 billion) and from trading in foreign exchange, currency and precious metals (–EUR 0.07 billion) posted a decline. In 2002, the continuing gloomy sentiment on international stock markets and the elimination of currency exchange fees for all predecessor currencies of the euro considerably dampened fee-based income. Fees payable on securities slipped by EUR 0.03 billion, while fees payable on payment transfers picked up by EUR 0.02 billion. The ratio of fee-based income to total operating income nonetheless inched up 0.2 percentage point to 22.0%. Despite its decline in absolute terms, fee-based income thus continued to be a major source of income of banks operating in Austria in the review period.

---

1   The past few years saw a rise in income from equity shares in affiliated enterprises, which largely stem from interconnected banks, so that double counts cannot be ruled out. Integration measures reduce the number of double counts.

Ratio of Fee-Based Income to Operating Income

EUR million   *%*

Commissions
Operating income
Ratio of fee-based income to operating income

Source: OeNB.
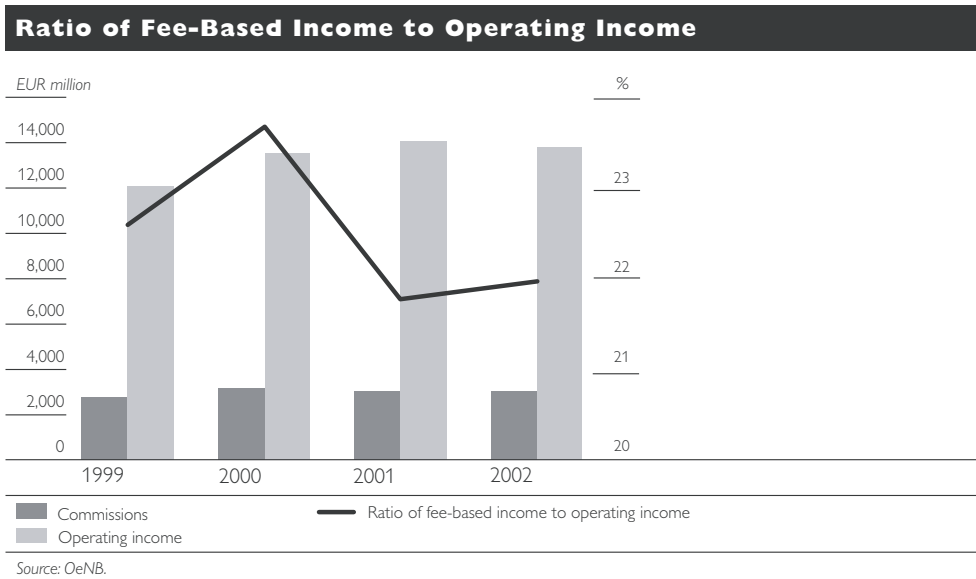
Net Income from Financial Transactions on the Rise

The net income from financial transactions amounted to EUR 0.57 billion, improving by EUR 0.05 billion or 9.5% in 2002. The performance of the individual segments was varied: Net income on securities other than financial fixed assets (+EUR 0.05 billion) and on other financial transactions (+EUR 0.01 billion) posted an increase, whereas income on trading in foreign exchange, currency and precious metals dropped by EUR 0.01 billion. The share of proprietary trading in total operating income ran to 4.2%, up by 0.5 percentage point.

Other Operating Income

At EUR 1.28 billion, other operating income clearly trailed the comparable 2001 figure by EUR 0.14 billion or 9.8%, reflecting a decrease by EUR 0.15 billion of any other operating income stemming not from the sale of fixed assets (essentially income on noncore banking business).

General Administrative Expenses Climb More Moderately

General administrative expenses climbed much more moderately by EUR 0.09 billion or 1.1% than in the like period of the past few years. Staff costs augmented by EUR 0.10 billion or 2.1% to EUR 4.78 billion. The ratio of staff costs to total operating expenses stood at 50.3%, against 49.4% in 2001.

Ratio of Staff Costs to Total Operating Expenses

EUR million   %

9,000
8,000   51
7,000
6,000
5,000   50
4,000
3,000   49
2,000
1,000
0   48
        1999   2000   2001   2002

■ Staff costs   ▬▬ Ratio of staff costs to operating expenses
■ Operating expenses
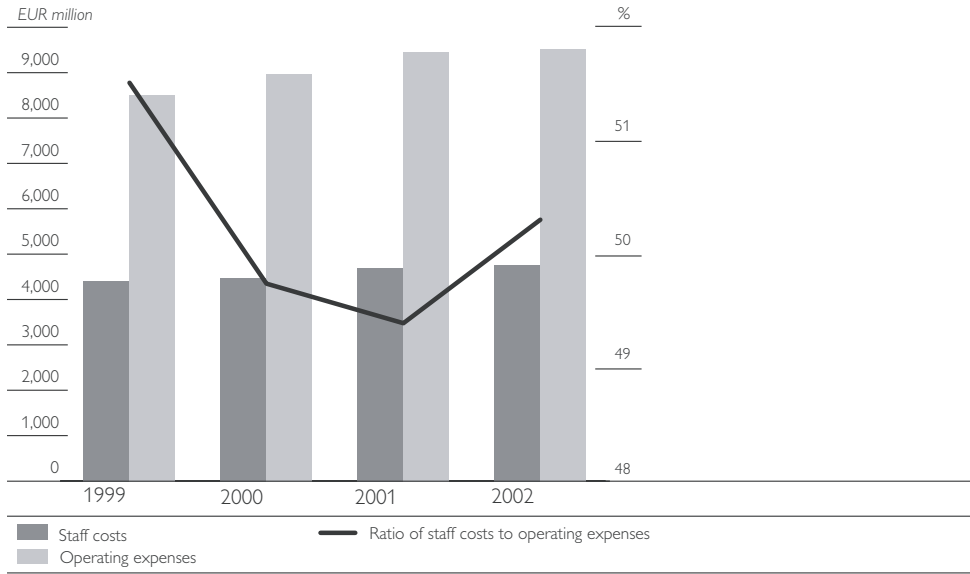
Source: OeNB.

After a surge of other administrative expenses in recent years, they decelerated slightly by EUR 0.01 billion or 0.4% in 2002, coming to EUR 3.14 billion. The ratio of other administrative expenses to total operating expenses came to 33.0%, down by 0.2 percentage point compared to the analogous 2001 period. The cost-cutting measures initiated because of the difficult income situation already showed first – tentative – results.

Ratio of Other Administrative Expenses
to Total Operating Expenses

EUR million   %

9,000
8,000
7,000   33
6,000
5,000   32
4,000
3,000
2,000   31
1,000
0   30
        1999   2000   2001   2002

■ Other administrative expenses   ▬▬ Ratio of other administrative expenses to total operating expenses
■ Operating expenses
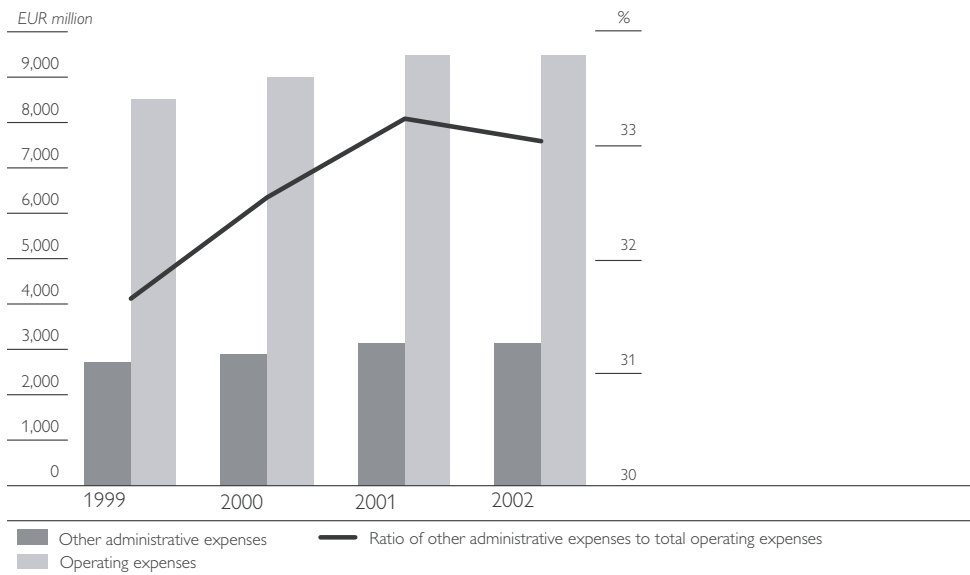
Source: OeNB.

Depreciation and Other Operating Expenses

Depreciation of fixed assets and intangible assets rose by EUR 0.06 billion or 8.8% to EUR 0.73 billion, a development which reflects the high investment activity of recent years. Other operating expenses shrank markedly by EUR 0.12 billion or 12.6%.

Outlook for Full-year 2002 Results[1])

Pending the making of end-year closing entries, the auditing of the annual financial statements by certified public accountants and their approval by the decision-making bodies, banks operating in Austria expect to have closed the 2002 business year with a final operating result of EUR 4.18 billion, which falls short of the comparable result of 2001 by as much as EUR 0.35 billion or 7.8%. The requirements for loan loss provisioning are expected to amount to EUR 2.04 billion, which is EUR 0.17 billion or 7.9% lower than the very high 2001 estimate, but still above the 2000 level. Loan loss provisions include above all write-downs of claims on nonbanks (EUR 2.26 billion). Although the anticipated write-downs clearly lag behind the corresponding 2001 figure, the difficult economic situation in Austria and abroad calls for high adjustments of claims on nonbanks also at the end of 2002.

Loan Loss Provisions
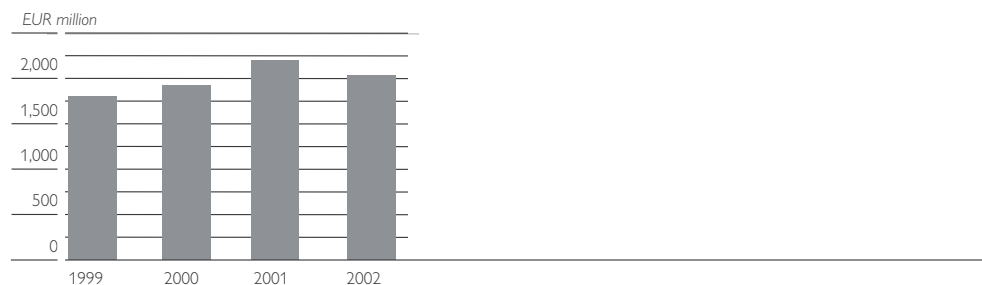
Source: OeNB.

While in 2001 exceptionally high recoveries from provisions for securities and participations stood to boost the profit for the year, the opposite is expected for 2002. More provisions will have to be created than can be cancelled so that the balance – EUR 0.07 billion (2001: –EUR 0.83 billion) – will have to be expensed in 2002. Especially gains realized upon the sale of balance-sheet asset items 5 to 8 (securities, shares, participating interests and equity shares in affiliated enterprises) are estimated to have slowed down in 2002, after having surged in 2001.

---

1   Banks operating in Austria transmitted the outlook data in their quarterly report of December 2002. Final results for the fourth quarter and the full year will be reported to the OeNB upon finalization of year-end audits.

Transfer from/to Provisions for Securities and Participations

EUR million

Source: OeNB.
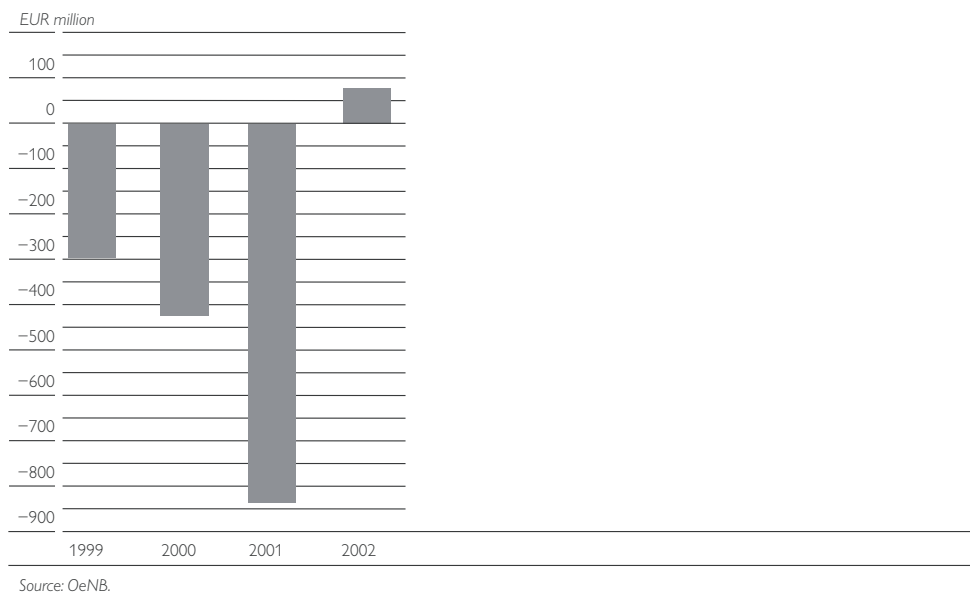
With risk provisions and value adjustments accounted for, the projected income on ordinary activities runs to EUR 2.07 billion, an assessment that falls EUR 1.08 billion or 34.3% below that of the like 2001 period. Extraordinary expenses for 2002 are forecast at EUR 0.24 billion, which substantially exceeds the comparable figure for 2001 of EUR 0.08 billion. At the reporting date, expected tax liabilities came to EUR 0.39 billion, which equals a small rise of EUR 0.01 billion or 1.6% against the same period of 2001. Hence, the annual surplus of banks operating in Austria is projected to amount to EUR 1.44 billion, markedly falling behind the 2001 figure of EUR 2.69 billion by EUR 1.25 billion or 46.3%.

Projected Annual Surplus

EUR million

Source: OeNB.
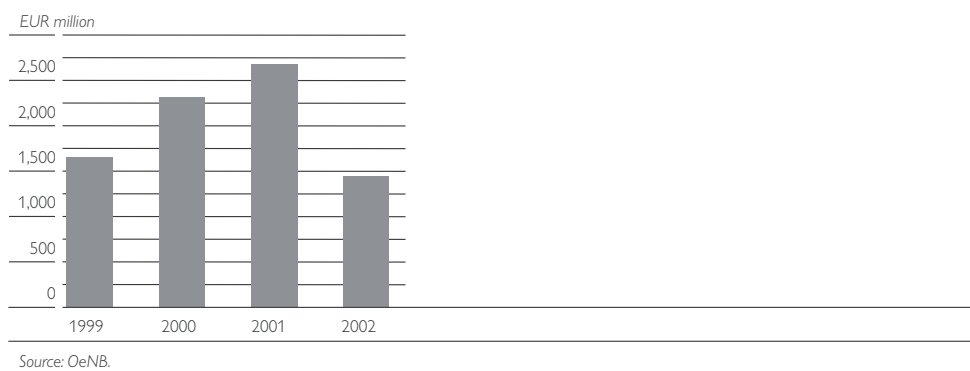
At the reporting date, return on equity[1] amounted to 5.4%, a clear reduction by 4.4 percentage points against the year 2001. The return on assets[2] ran to 0.25% in 2002; down by 0.23 percentage point against the 0.48% of the year 2001

1   Definition of return on equity: ratio of annual surplus to tier I capital.
2   Definition of return on assets: ratio of annual surplus to average total assets.

Balance of Payments in the First Three Quarters of 2002[1])

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

- A rise in exports and lower income outflows caused a noticeable improvement of the Austrian current account.
- Austrian direct investment abroad continued to thrive.
- Both on the assets and the liabilities side, securities transactions surged.

1 Current Account

In Austria — as in the euro area — domestic demand did not revive during the period under review; expectations of an economic upswing in the second half of 2002 could not be met. In the first three quarters of 2002, Austrian real GDP rose by just 0.8% year on year, with the economy firing on just one cylinder, namely net exports.

These conditions caused the Austrian current account deficit to narrow substantially in the first three quarters; based on transactions,[2]) it only ran to EUR 760 million against EUR 3.6 billion in the like period of 2001.

For a meaningful description and analysis of data, the following *methodical note* is necessary: A new statistical data collection method for travel expenses of Austrian residents distorts the comparison between the intra-year data for the first three quarters of 2002 and the like 2001 figures (see section 1.1.2.1 Travel). Thus, the sharp reduction of the current account deficit reported for the first three quarters of 2002 may in fact have even been understated.

Chart 1

Austria's Current Account[1])

Source: OeNB.
[1]) Up to 2000: final data; 2001: revised data; 2002: provisional data.
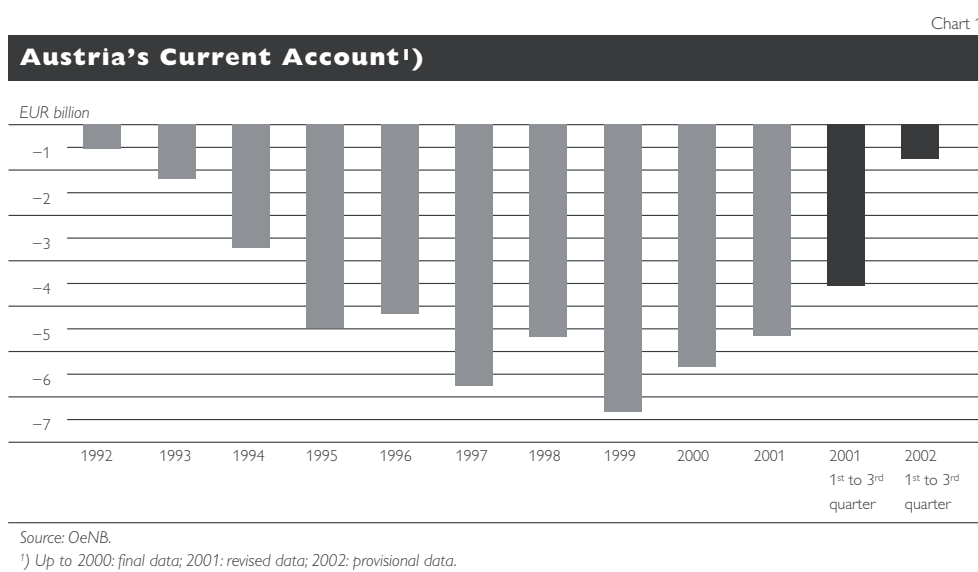
In trade with other *euro area countries* (see chart 2), Austria's current account closed with a narrower year-on-year deficit in the amount of EUR 5 billion, after EUR 5.6 billion between the first and third quarters of 2001. In its external relations with *non-euro area countries,* however, Austria's current account surplus jumped to EUR 4.2 billion against EUR 2.0 billion in 2001.

---

1   *Based on transactions. Cutoff date for data: February 12, 2003.*
2   *Contrary to the monthly cash balance, whose purpose is to provide a quick overview, the transaction balance is based on 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.*

Chart 2

Austria's Current Account Broken Down by Regions[1]

EUR billion

| | 1st to 3rd quarter 1999 | 1st to 3rd quarter 2000 | 1st to 3rd quarter 2001 | 1st to 3rd quarter 2002 |

■ Non-euro area
□ Euro area

Source: OeNB.
[1] Up to 2000: final data; 2001: revised data; 2002: provisional data.
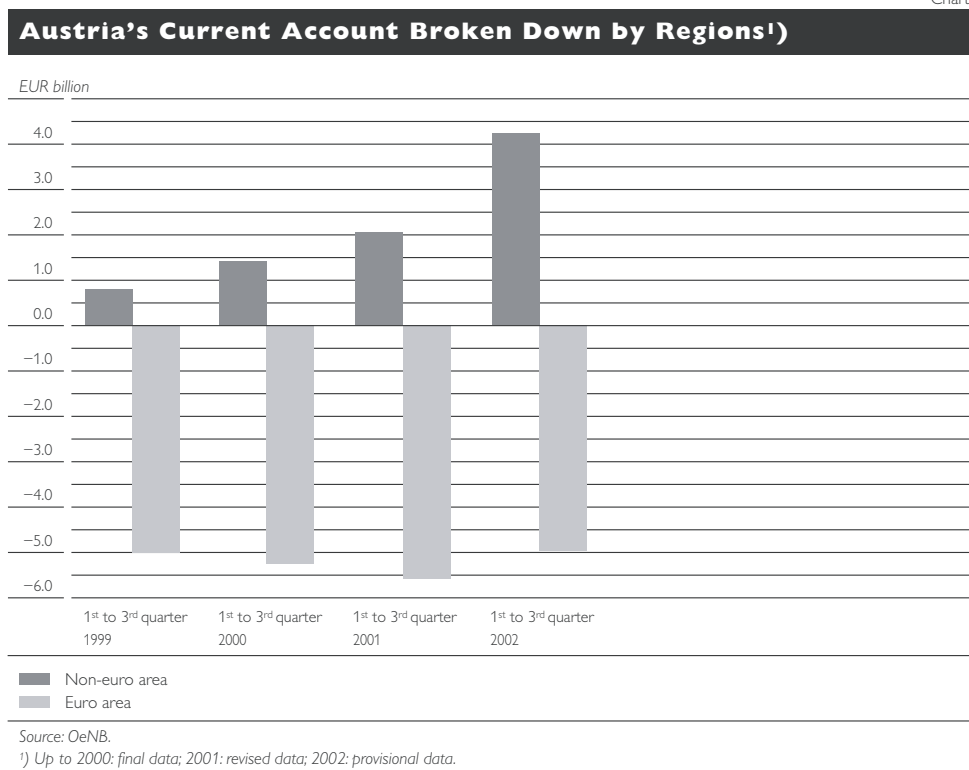
Thus, Austria contributed to the current account surplus of the *euro area* as a whole. According to data provided by the European Central Bank (ECB) for the first three quarters of 2002, the euro area current account turned from a deficit of some EUR 23 billion in the first three quarters of 2001 to a surplus of some EUR 37 billion in the period under review. One of the major factors in this development was a significant rise in the external trade surplus. In the euro area, imports declined by 5%, whereas exports picked up 2%.

1.1 Goods and Services
In the first three quarters of 2002, Austria's surplus on goods and services climbed from EUR 40 million to EUR 2.0 billion year on year. However, because of the conceptual data collection change for travel expenses (see section 1.1.2.1 Travel) the increase shown in the balance on goods and services is in fact statistically understated by EUR 0.5 billion.

1.1.1 Goods
In the first three quarters of 2002, Austria recorded a slight external trade surplus of EUR 320 million, compared with a deficit of EUR 3.8 billion in the same period of 2001 (data provided by Statistics Austria).[1] This improvement

1 For conceptual reasons, the OeNB's balance of payments statistics deviate from the external trade data compiled by Statistics Austria. While it is customary for external trade statistics to present imports at their cif (cost, insurance, freight) value and exports at their fob (free on board) value, by balance of payments conventions both exports and imports are valued at fob while freight and insurance costs are reflected in the services account.

can be traced to a decline in imports by 3.3% and an increase in exports by 3.9% (nominal figures). The reduction in merchandise imports can be attributed chiefly to weak domestic demand and the lower average oil price in the first nine months of 2002.

The deficit in Austria's external trade within the *euro area* (see annex, table 2) contracted by EUR 1.6 billion to EUR 3.8 billion in the first three quarters of 2002, with exports climbing by 2.4% and imports shrinking by 2.5%. In absolute figures, merchandise exports to other euro area countries totaled EUR 31.0 billion, and Austrian imports from the euro area EUR 34.8 billion. The improvements in the Austrian trade balance were strongest vis-à-vis Germany, Italy and France, causing the deficit vis-à-vis Germany to contract and the surplus in trade with Italy and France to widen.

In the period under review, merchandise trade with *non-euro area countries* also recorded both a growth in exports and a decline in imports, but the changes were more pronounced. Compared with 2001, merchandise exports climbed by 5.8%, while merchandise imports went down by 4.4%. Austria's exports to non-euro area countries came to EUR 26.2 billion, while non-euro area imports amounted to EUR 22.1 billion. In nominal terms, the setback in imports was most distinct for developing countries, which include the oil-exporting countries, at –EUR 700 million or –14%. At the same time, imports from Central and Eastern European countries slowed by EUR 110 million or 1.4%, whereas exports to this region jumped by EUR 750 million or 8%, with exports to Romania, Croatia and the Slovak Republic accounting for the highest growth rates.

1.1.2 Services

In the first three quarters of 2002, the balance on the services account turned from a surplus of EUR 1.6 billion to a deficit of EUR 750 million year on year. In this respect it should be noted that the deficit on unclassified transactions,[1] which are included in the services account, expanded from EUR 3.0 billion to EUR 5.7 billion.

1.1.2.1 Travel

After a good winter season, the number of overnight stays by tourists from abroad shrank visibly in the second quarter of 2002, but thereafter a successful third quarter pushed foreigners' overnight stays in the summer season up to 42 million. This figure, while representing the first rise in the summer results since 1998, still lags some 30% behind the level of 1991. In the summer of 2002, Austria seems to have, moreover, profited from the widespread fear of flying after the terrorist attacks of September 11, 2001.

The combined outcome of the first three quarters showed a rise in the number of overnight stays by tourists from abroad by 2.2% (see annex, table 4).

---

1   *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 exceeding 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.*

Visitors from Germany and the Netherlands, Austria's two chief origin markets, accounted for two thirds of the increase of tourist overnight stays, totaling 1.55 million, between January and September 2002. Statistics Austria, moreover, also reported a rise for other traditional origin countries, such as Switzerland, the United Kingdom, Italy and France. Overseas visitors, particularly U.S. tourists, were generally coming in markedly fewer numbers.

Travel receipts blossomed. In the first three quarters of 2002, they ran to EUR 9.7 billion, that is EUR 620 million more than in the comparable period of 2001 (see annex, table 3). Given the increase in overnight stays by 2.2% and price boosts by roughly 2.5%, this growth in receipts of almost 7% means a noticeable expansion of the real expenditure per overnight stay. This development is also reflected in an above-average growth of overnight stays in higher-quality lodgings. Revenues from international passenger transport, which are not included in travel receipts, augmented slightly by 1.9% to EUR 1.6 billion.

Since the introduction of euro banknotes and coins, the travel spending of Austrians has been determined on the basis of a survey among households.[1] According to this survey, travel expenditure (excluding international passenger transport) came to EUR 8.3 billion and expenses for international passenger transport ran to EUR 620 million. This equals an 8.7% rise in travel expenditure compared to the same period of 2001. However, this comparison is misleading because the survey, while producing comparable annual results, shows different seasonal patterns that reflect the economic reality more accurately. While travel expenses as reported in this survey have consistently been clearly lower in the first and fourth quarters than under the previous system, which was based on cash flows, the figures for the third quarter are significantly higher under the new system. Compared with 2001 data, travel expenditure (including international passenger transport) more or less stagnated at +EUR 55 million or +0.6%. It follows that the deterioration by EUR 37 million reflected in the travel balance has been distorted downward: based on comparable figures, the travel surplus in fact expanded by EUR 465 million.

1.1.2.2 Other Services

Excluding travel, the services account for the first three quarters of 2002 showed a deficit of EUR 2.2 billion, compared with a surplus of EUR 112 million year on year – a deterioration that can be ascribed chiefly to unclassified transactions, as mentioned above. Conversely, we report improvements especially in the following services items: The surplus in the item *transportation (including passenger transport)* widened by EUR 490 million, and the deficit of EUR 5 million on financial services reversed to a surplus of EUR 120 million.

---

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

1.2 Income

At EUR 1.4 billion, the deficit in the first three quarters of 2002 on the income subaccount remained EUR 1.1 billion below the comparable result of 2001. This is the lowest deficit since the beginning of the Economic and Monetary Union. Income related to the *compensation of employees,* as received by border workers and seasonal workers in particular, added up to a surplus of EUR 400 million, as much as in previous years. By contrast, the deficit on *investment income* was significantly lower at EUR 1.8 billion than in the first three quarters of 2001 at EUR 3 billion. This deficit reduction is mostly traceable to income on other investment, which more than doubled its surplus year on year.

The regional breakdown of net investment income shows that the bulk of net outflows went to the euro area (mostly Germany, Luxembourg and Belgium), while the highest share of net capital income came from Eastern Europe. The EU accession countries[1]) (notably Hungary, Poland and the Czech Republic) account for an increasing share in net income from cross-border income.

Chart 3

Components of Austria's Investment Income[1])

EUR million

Source: OeNB.
[1]) 1999 to 2000: final data; 2001 revised data; 2002: provisional data.
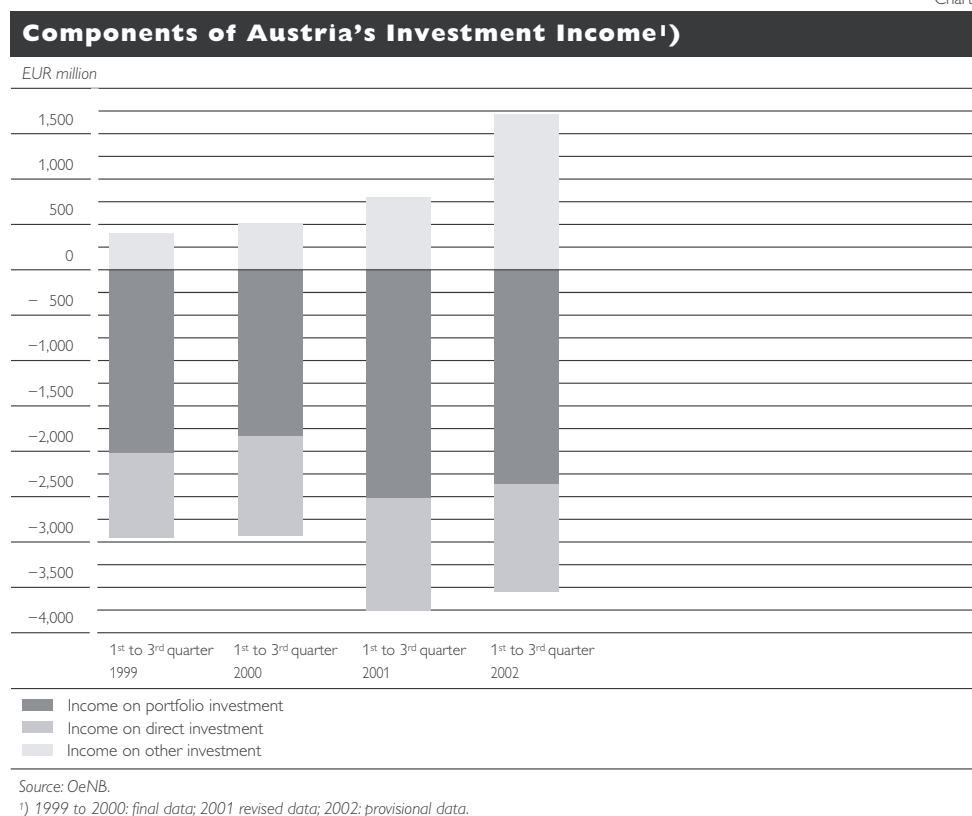
A breakdown by key subaggregates shows Austria to have incurred net deficits on income from both direct and portfolio investment (EUR 1.2 billion and EUR 2.4 billion, respectively), and to have achieved a surplus on other investment income of EUR 1.7 billion (see annex, table 5). A sectoral allocation

---

1   EU accession countries: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia.

of net results shows the public sector to be a net payer and the OeNB, banks and other sectors to be net recipients.

Since the stock of foreign direct investment (FDI) in Austria exceeds the stock of Austrian FDI abroad and since, in addition, inward investment projects are more profitable in a long-term comparison as they are more mature, the balance on *direct investment income* is always in deficit. The profits Austrian FDI investors estimate to have accrued in the first three quarters of 2002 total EUR 1.6 billion, while foreign-owned Austrian companies post EUR 2.8 billion in profits, which results in a net outflow of EUR 1.2 billion. Whereas the profits distributed by direct investment enterprises established abroad by Austrian parent companies have contracted significantly, the dividend payments of Austria-based direct investment enterprises to their foreign parent companies continued to be high, resulting in reinvested earnings of EUR 990 million for outward FDI, and EUR 1.4 billion for inward FDI.

Income on portfolio investment remains the key component of investment income. Portfolio investment-related income accrued abroad came to as much as EUR 4.2 billion in the first three quarters of 2002, but fell clearly short of outgoing income payments made in the same period (EUR 6.6 billion). The relative increase ran to 15% on the assets and 6% on the liabilities side. A regional allocation of net inflows and outflows in this income category shows that net outflows to the EU continue at a high level at EUR 2.4 billion. Within the EU, half of the outflows went to euro area countries, while the United Kingdom accounted for the biggest residual item. In terms of income on portfolio investment, the EU accession countries remain net payers to Austria.

Chart 4

Net Investment Income on Portfolio Investment

by Selected Regions¹)

EUR million

	1st to 3rd quarter 1999	1st to 3rd quarter 2000	1st to 3rd quarter 2001	1st to 3rd quarter 2002

Euro area
Denmark, United Kingdom, Sweden
Accession countries
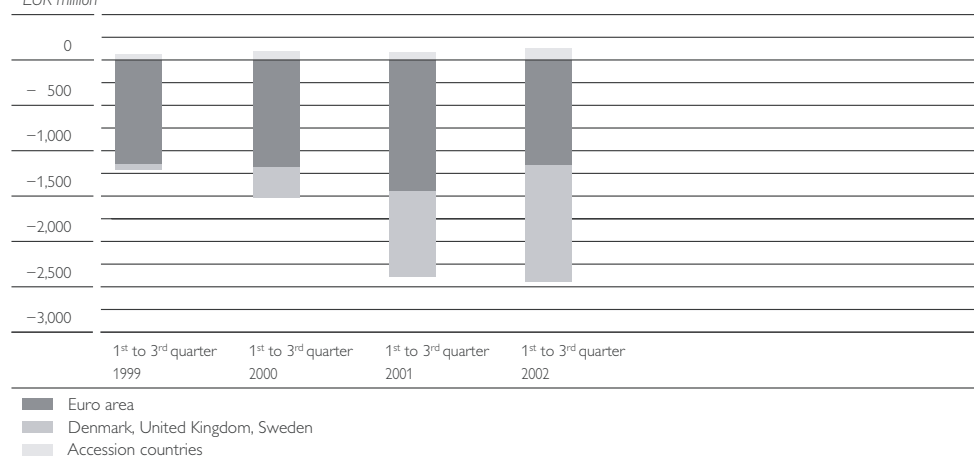
Source: OeNB.
¹) 1999 to 2000: final data; 2001: revised data; 2002: provisional data.

Income on bonds and notes accounted for 90% of the results on both sides of the balance sheet. In the first three quarters of 2002, Austrian investors received EUR 3.8 billion in interest income, while Austrian borrowers had to pay EUR 6.3 billion in interest income. On the assets side, interest income went

mainly to the segment of "other sectors" (62%), in particular institutional investors, and to banks (35%). The liabilities side recorded interest payments above all by the general government (52%) and also by banks (38%). In a comparison of net results, the Austrian general government and banks are net contributors, while the other sectors, mostly institutional investors, are net recipients. On both the assets and the liabilities side, the euro area accounted for 60% of the result, with Germany playing the key role within the euro area. The runners-up were the United States at 11% on the assets side and the United Kingdom at 24% on the liabilities side.

In the first three quarters of 2002, *income on other investment* – cross-border lending and deposit-taking – and reserve assets posted a combined surplus of EUR 1.7 billion, which corresponds to an increase by EUR about 920 million. Year on year, other investment income receipts slowed down by 17%, while payments decreased by 43%. Other investment income accounted for 41% of overall investment income on the assets side and for 19.6% on the liabilities side, which compares with 49.5% and 31.6%, respectively, in the same 2001 period. A breakdown into regions reveals Austria to have been a net recipient of income arising from other investment both in the euro area (more than EUR 1 billion) and in the accession countries (EUR 313 million).

A sectoral analysis of the Austrian economy in the first three quarters of 2002 shows that the general government closed with higher net income outflows of EUR 140 million that were traceable to foreign borrowing (review period 2001: EUR 50 million). The Austrian banking sector managed to widen its income surplus by EUR 950 million to EUR 1.3 billion, reflecting a significant decrease in its income deficit on currency and deposits and a decline in its surplus on loans. Other sectors – institutional investors, enterprises and households – closed the first three quarters of 2002 with higher income receipts in the amount of EUR 116 million, an increase by EUR 80 million.

1.3 Current Transfers

The shortfall of current transfers came to EUR 1.3 billion in the first three quarters of 2002, which corresponds to an expansion by EUR 270 million. This rise in outflows was mainly attributable to the other sectors, which stepped up their net payments from EUR 100 million to EUR 440 million. Transactions with EU institutions dominated public sector current transfers at –EUR 870 million net. Austria's contribution to the EU budget amounted to EUR 1.6 billion during the reporting period, while its receipts (excluding EU contributions to infrastructure projects) came to EUR 1.0 billion, resulting in a net payment of EUR 600 million compared with EUR 800 million in the first three months of 2001.

2 Capital Account

The capital account closed the reporting period with outflows in the amount of EUR 290 million.

General government capital transfers in kind resulted in net outflows of EUR 140 million, after EUR 30 million in the first three quarters of 2001. Since 2001, these outflows have comprised restitution payments by the general government sector.

The balance of *other sectors'* capital transfers *in kind* closed with higher gross flows, but at a similar deficit as in the like period of 2001 at EUR 180 million. The higher outflows can chiefly be attributed to debt relief effects, the higher inflows to immigration effects.

In terms of volume, capital transfers *in cash,* which are part of this subbalance, play a minor role in the Austrian balance of payments statistics.

3 Financial Account

The balance on the Austrian financial account reversed from capital imports in the first three quarters of 2001 in the amount of EUR 3.3 billion to capital exports of EUR 2.8 billion in the first nine months of 2002 (see annex, table 6). While Austrians continued to expand their investments abroad by 11% to EUR 19.2 billion in the period under review, investments made by nonresidents in Austria fell by 20% to EUR 16.5 billion against the first three quarters of 2001.

The subbalance of *foreign direct investment* accounted for capital outflows of EUR 3.6 billion in the first three quarters of 2002, reflecting both notably higher outward FDI flows of EUR 4.8 billion (+69%) and substantially lower inward FDI flows of EUR 1.2 billion (–77%). *Portfolio investment,* which had been almost balanced in the same period of last year, closed with capital exports in the amount of EUR 3.6 billion. In terms of volume, Austrians invested almost twice as much in foreign securities at EUR 22.4 billion as in the first nine months of 2001; at the same time, nonresidents also bought more domestic securities at EUR 18.8 billion in the review period, after EUR 11.9 billion in the same period of 2001. A breakdown into financial instruments shows that debt securities dominated both inflows and outflows. The balance on *other investment* turned from capital outflows of EUR 1.5 billion in the comparable period of 2001 to capital inflows of EUR 3.9 billion in the review period 2002, a development that is largely traceable to banks' short-term capital flows, including deposit and lending transactions.

When cross-border transactions are broken down by *interest-bearing[1]) and venture capital-oriented[2]) investment,* it becomes evident that interest-bearing investment accounted for the majority of cross-border transactions: In the first nine months of 2002, Austrian residents invested EUR 10.7 billion, i.e. 56% of total outward investment, in interest-bearing financial assets. This dominance was even more pronounced on the liabilities side, where EUR 13.4 billion or 81% of total volumes were thus invested.

A regional allocation of cross-border capital flows shows that, in the first three quarters of 2002, net capital inflows from *euro area countries* dropped from EUR 12.7 billion to EUR 7.9 billion (see annex, table 7). Capital flows from holdings on euro area assets augmented to EUR 7 billion in the review period, whereas, on the liabilities side, transactions with euro area countries decreased slightly to EUR 14.9 billion.

In capital transactions with *non-euro area countries,* Austria recorded net capital outflows of EUR 10.7 billion in the first nine months of 2002, compared

---

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

2 *Investment in equity stakes and equity securities.*

with EUR 9.4 billion in the like 2001 period. The decline in gross investment of Austrian residents abroad from EUR 14.2 billion to EUR 12.2 billion was more than offset by an even greater slump by two thirds of foreign investment in Austria to EUR 1.5 billion (see annex, table 7).

Chart 5

Austria's Financial Account (Selected Net Subaccounts)

in the First Three Quarters of 2002

EUR billion

Euro area   Non-euro area

Source: OeNB.
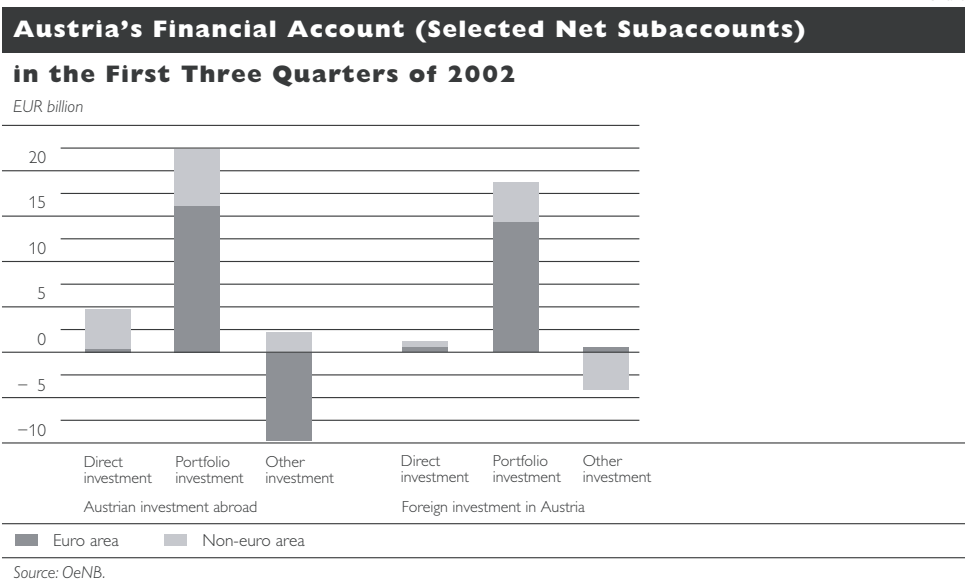
A sectoral breakdown of the financial account shows an almost balanced result for *MFIs* (the OeNB and banks) and capital exports of EUR 2.7 billion for *nonbanks* (general government and other sectors). In the first three quarters of 2002, the *general government* recorded capital inflows of EUR 7.6 billion, with transactions on both the assets and the liabilities side declining against the like 2001 period. The *other sectors[1]* reported an increase of net outflows from EUR 5.9 billion to EUR 10.3 billion in the reporting period, which is largely traceable to a surge of portfolio investment on the assets side by 137%.

3.1 Direct investment

Global cross-border FDI flows halved in 2001 against 2000, thus reverting to the long-run trend. Against this background, and given the uncertainty shrouding the global economy and the continued weakness of stock exchanges, UNCTAD expected direct investment to remain slack also in 2002 (see UNCTAD: World Investment Report 2002). In Austria, this effect has so far emerged in a very asymmetric fashion. Whereas inward FDI growth was substantially weaker than in previous years, outward FDI turned out to be highly robust. Thus, the gap by which outward FDI falls short of inward FDI might actually have narrowed in 2002.

Outward direct investment of Austrian businesses totaled EUR 4.8 billion net in the first three quarters of 2002, which is by far the biggest result ever registered in the first nine months, and equals the second largest full-year

---

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

result. The total of EUR 4.8 billion comprises investment in equity amounting to EUR 3.7 million, EUR 990 million of reinvested earnings and EUR 140 million in the form of intercompany loans. The given amount of equity capital included gross new investment of some EUR 4.5 billion, compared to EUR 800 million in disinvestment.

Central and Eastern European countries (CEECs) attracted more than half (EUR 2.5 billion) of the FDI capital invested. The Czech Republic accounted for the lion's share (EUR 760 million), followed by Poland (EUR 610 million), Croatia (EUR 410 million) and Slovenia and Hungary (between EUR 230 million and EUR 240 million each). About one quarter of outward FDIs was invested outside of Europe, for instance in offshore financial centers in the Caribbean and in Australia. Within Western Europe, mainly investments in Germany and Denmark and, to a lesser degree, in Switzerland and the United Kingdom were significant. Banks, trading and holding companies were the chief investment sectors.

Conversely, there was a steep falloff in *inward* direct investment, which registered the lowest result since 1995 at EUR 1.2 billion, on the back of a standstill in net new investment. Gross investment in equity amounting to EUR 1.3 billion fell short of disinvestment totaling EUR 1.4 billion. On the plus side, only reinvested earnings improved the balance by EUR 1.4 billion, while intercompany loans caused the balance to deteriorate by EUR 120 million.

Most of the capital invested came from Germany (EUR 1.1 billion), followed by the United States (EUR 320 million) and Switzerland (EUR 230 million). Vis-à-vis the Netherlands, by contrast, disinvestments of over EUR 730 million were recorded, reflecting Telecom Italia's pullout from the Austrian telecommunications market.

3.2 Portfolio investment

International financial market conditions:

In the second and third quarters of 2002, long-term interest rates plummeted both in the euro area and the United States. The yields of ten-year U.S. treasury notes fell by roughly 180 basis points, and those of ten-year German government bonds by some 100 basis points. The benchmark yield of Austrian government bonds followed this downward trend and came to 4.5% at the end of September, thus lagging about 100 basis points behind its peak of mid-May 2002. This great demand for government bonds was traceable to the sluggish economy, the concurrent downward revisions of inflation expectations and the ensuing stock market downtrend. The continuing stock price slumps entailed a flight into quality, as the default risk of government bonds is substantially smaller than that of other instruments.

The U.S. and euro area stock markets were characterized by plunging stock prices in 2002. Since July 15, 2002, the euro STOXX index has gone down by some 17%, and the S&P 500 index has retreated by about 7.5%. In contrast to these two indices, the Austrian leading index ATX proved to be much more stable. We cannot discern a long-term downtrend of the ATX, although it has recently also recorded price declines. At the end of September 2002, it stood at 1070 points, just like at the beginning of 2001.

In the period under review, interest rates on the euro money market showed a relatively stable development. Before the summer of 2002, the three-month Euribor rate stood at about 3.5%; after the summer, it sank to some 3.3%. Interest rates on the U.S. money market developed largely along the same lines.

On foreign exchange markets, the second quarter of 2002 was largely marked by a weak U.S. dollar. In the third quarter, the U.S. dollar stabilized at a level between 0.97 cents and 0.99 cents against the euro.

In the Austrian financial account, cross-border transactions related to the acquisition and sale of securities resulted in net capital exports of EUR 3.6 billion in the first three quarters of 2002. The corresponding gross values indicate that both Austrian investment in foreign securities (assets side) and foreign investment in Austrian securities (liabilities side) are higher than in the same 2001 period. Gross portfolio investment in shares, debt securities and money market instruments continued to dominate the financial account in the reporting period. Both on the assets and the liabilities side, debt securities accounted for more than 80% of the volume of portfolio investment transactions.

A sectoral breakdown of portfolio investment abroad shows that other sectors – mainly institutional investors – made 51% of investments, followed by banks with 34%. The majority of foreign investors bought securities issued by the Austrian government (55%) and by banks (33%).

Both on the assets and the liabilities sides, over two thirds of all transactions were conducted with euro area counterparties (see annex, table 7), with purchases of euro area securities by Austrian investors surpassing purchases of Austrian securities by euro area investors by EUR 1.7 billion. At the same time, the portfolio investment position vis-à-vis the rest of the world also recorded net capital exports of EUR 1.9 billion.

3.2.1 Portfolio Investment in Foreign Securities

In the first three quarters of 2002, Austrian investors acquired foreign securities to the tune of EUR 22.4 billion, that is almost twice as much as in the comparable 2001 period. 68% thereof were invested in bonds and notes, 16% in money market instruments, 14% in shares and 2% in mutual fund shares. Austrian investors' main focus was on securities issued in the euro area (72%) and in the U.S.A. (12%).

More specifically, domestic investors purchased *foreign equity securities* for EUR 3.2 billion, issued above all by businesses incorporated in the U.S.A. (42%) and the euro area (35%) – notably in Germany and France. Investments in this type of securities were predominantly made by domestic institutional investors, followed at some distance by households.

Investment in *foreign mutual fund shares* amounted to EUR 480 million in the first three quarters of 2002, compared with EUR 620 million year on year. A breakdown by regions shows that British and Irish mutual fund shares were highest in demand with Austrians, whereas Swiss mutual fund shares accounted for disinvestments. In the reporting period, domestic mutual funds, which constituted the largest group of investors in this field, preferred balanced funds.

When investing in foreign securities, Austrian investors typically go for debt securities, which were predominant also in the reporting period at EUR 18.7

billion: 68% of all foreign securities purchased were *bonds and notes* (EUR 15.1 billion), which equals a year-on-year plus of 50% against the first three quarters of 2001. By geographic allocation, 80% of debt securities purchased were euro area issues, with German (33%), Italian (14%) and Greek (7%) issues being of particular interest to Austrians. Demand for accession countries' issues (8%) also picked up in Austria. By investing category, the key investors were other sectors (mostly institutional investors) at some 52% and Austrian banks at 48%. Investments were almost exclusively made in euro-denominated securities and only to a smaller extent in U.S. dollar-denominated debt securities (6%). Austrian investors also purchased securities issued in Polish zloty (2%), Czech koruna and Hungarian forint (1% each).

Austrians acquired *foreign money market instruments,* mainly commercial paper and certificates of deposit, to the tune of EUR 3.5 billion. Investors concentrated largely on euro area issues (Germany, the Netherlands, Italy and Ireland) and on paper issued in the United States and the United Kingdom. Investments focused almost exclusively on euro-denominated securities, with debt securities denominated in Japanese yen and U.S. dollars only accounting for 3% and 2%, respectively. In terms of volume, the major investor in foreign money market instruments was the Austrian government.

Chart 6

Securities Transactions by Financial Instruments¹)

Source: OeNB.
¹) 2000: final data; 2001: revised data; 2002: provisional data.
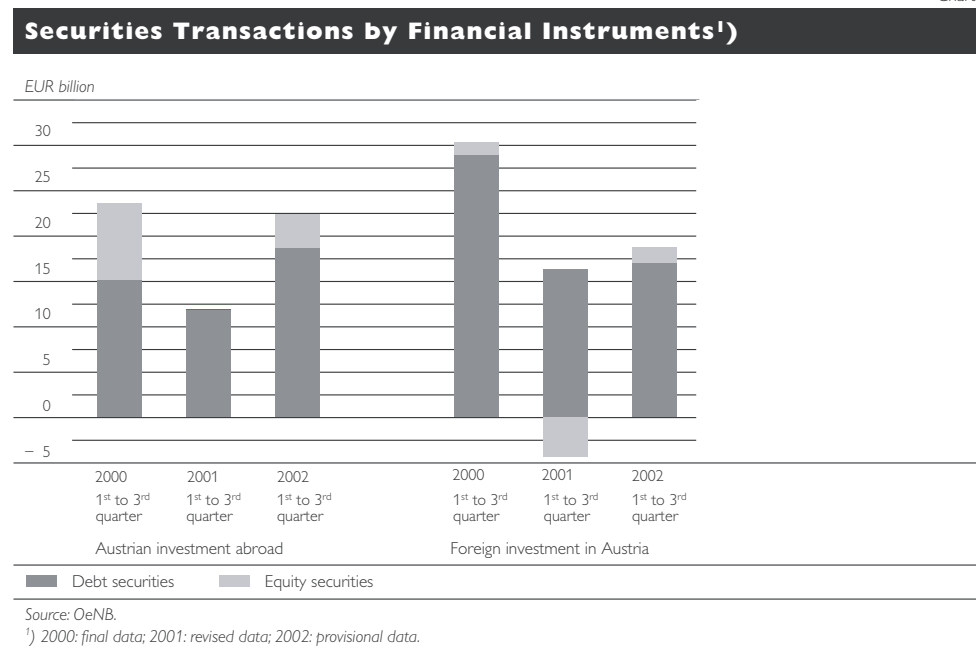
3.2.2 Portfolio Investment in Domestic Securities

In the first three quarters of 2002, foreign investors acquired Austrian securities in the amount of EUR 18.8 billion, which – just as on the assets side – equals a substantial rise year on year. Debt securities accounted for the lion's share of investment in this category.

Of the EUR 1.7 billion worth of *domestic equity securities* sold to foreign investors, *Austrian shares* accounted for EUR 1 billion. Most of the capital was invested in bank issues.

Austrian mutual fund shares acquired by foreign investors totaled EUR 730 million. Investors were chiefly interested in domestic balanced funds (67%) and money market funds.

As in previous years, foreign investors showed a clear preference for Austrian *debt securities;* in this category, the transaction value was EUR 17.3 billion in the first three quarters of 2002. Aside from euro-denominated issues (66%), nonresidents mainly purchased U.S. dollar-denominated (17%) and Swiss franc-denominated (13%) securities. A breakdown of debt security investment by sectors revealed that general government issues accounted for 57% and bank issues for 35% of foreign investment. In the first three quarters of 2002, foreigners invested EUR 10.1 billion in new issues or reopened issues of the Republic of Austria, amounting to 80% of the overall volume of EUR 12.6 billion.

Government Bond Syndication and Tender Offers		
in the First Three Quarters of 2002[1])	ISIN	External transactions
		EUR million
5.0% Federal government bond 2002−2012/1/144A	AT0000385356	6,091
5.875% Federal government bond 1996−2006/7	AT0000383518	790
5.5% Federal government bond 2000−2007/144A	AT0000384953	3,207
Total		10,088

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

Liabilities from *domestic money market instruments* decreased by EUR 260 million, with short-term bonds issued by the Austrian government being sold abroad and, at the same time, banking sector commercial paper and certificates of deposit being redeemed.

3.3 Other Investment

In the first three quarters of 2002, the Austrian *other investment* net result – loans, cash and deposits – turned from capital outflows of EUR 1.5 billion to capital inflows of EUR 4 billion.

On the assets side, cross-border lending and deposit-taking accounted for capital imports of EUR 7.5 billion in the first three quarters of 2002, reflecting above all a surge in currency and deposits and a decline in capital exports generated by unsecuritized loans (the latter totaled EUR 5.4 billion, which is EUR 2.5 billion lower than the comparable 2001 and 2000 figures). In a regional breakdown, the increase of investment in the euro area proved to be stable year on year at EUR 1.8 billion. The volume of investment in the United Kingdom, Denmark and Sweden, which had strongly increased from 1999 to 2001, decreased due to capital repayments, after having run to EUR 4 billion in the review period 2001. Lending to the ten EU accession countries trended upwards compared with the two previous review periods: loans rose to just over EUR 1 billion, thus corresponding to the peak full-year result for 2000.

For the most part, Austrian banks carried the expansion of external lending; their activities accounted for a volume EUR 4 billion. Whereas the 2001 reduction of loans against the peak in the reporting year 2000 was traceable

to short-term lending, the declining trend in 2002 was mostly attributable to long-term loans. The transaction-based rise in the loan assets of businesses (including institutional investors), by contrast, remained stable at just over EUR 1 billion year on year.

In the first three quarters of 2002, other investment liabilities accounted for capital exports to the tune of EUR 3.6 billion. The Austrian economy augmented its loan liabilities abroad by EUR 1.5 billion. The inflow of unsecuritized loan capital from EU countries outside the euro area came to 60% of the overall transaction volume (EUR 900 million against EUR 150 million in the euro area) and outdid the full-year figure of 2001 (EUR 540 million against EUR 1.3 billion in the euro area). Banks and other sectors – essentially businesses and households – extended their liabilities by some EUR 1 billion each. The public sector redeemed some of its liabilities from loans abroad.

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.

In the first three quarters of 2002, the financial derivatives subaccount closed with net capital exports of EUR 1.1 billion. The interest-based derivatives contained therein accounted for capital imports to the tune of EUR 700 million.

3.5 Reserve Assets

In the first three quarters of 2002, reserve assets decreased by EUR 1.7 billion through transactions.

This development was mainly attributable to the decline in deposits and Special Drawing Rights in the amount of EUR 790 million. Also securities under reserve assets dropped by EUR 650 million. In the second quarter of 2002, gold sales amounted to EUR 310 million. Austria's reserve position in the IMF increased by EUR 90 million in the review period.

Annex

Table 1

Balance of Payments Summary

	1st to 3rd quarter 2001[1])	1st to 3rd quarter 2002[2])	Annual change
	EUR million		
Current account	−3,568	− 762	+2,806
Goods, services and income	−2,519	+ 556	+3,075
Goods and services	+ 38	+1,991	+1,953
Goods	−1,555	+2,743	+4,298
Services	+1,593	− 752	−2,345
Travel	+1,481	+1,444	− 37
Other services items	+ 112	−2,196	−2,308
Transportation	+1,307	+1,799	+ 492
thereof international passenger transport	+ *818*	+ *950*	+ *132*
Construction services	+ 194	+ 89	− 105
Financial services	− 5	+ 122	+ 127
Royalties and license fees	− 370	− 484	− 114
Other business services	+1,712	+1,570	− 142
thereof merchanting	+ *985*	+ *983*	− *2*
Other services	+ 317	+ 382	+ 65
Unclassified transactions	−3,043	−5,674	−2,631
Income	−2,557	−1,435	+1,122
Compensation of employees	+ 398	+ 397	− 1
Investment income	−2,955	−1,832	+1,123
Current transfers	−1,049	−1,317	− 268
General government	− 949	− 873	+ 76
Other sectors	− 100	− 444	− 344
Capital and financial account	+2,974	−3,069	−6,043
Capital account	− 300	− 294	+ 6
General government	− 35	− 137	− 102
Other sectors	− 215	− 178	+ 37
Acquisition/disposal of nonproduced, nonfinancial assets	− 50	+ 21	+ 71
Financial account	+3,273	−2,775	−6,048
Direct investment	+2,192	−3,612	−5,804
Portfolio investment	+ 15	−3,623	−3,638
Other investment	−1,540	+3,911	+5,451
Financial derivatives	+ 575	−1,112	−1,687
Reserve assets[3])	+2,031	+1,662	− 369
Errors and omissions	+ 594	+3,830	+3,236

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 to 3rd quarter 2002					
	Exports		Imports		Balance	
	Annual change	Share of total exports	Annual change	Share of total imports		Annual change
	%				EUR million	
EU	+2.3	60.7	− 2.4	65.8	−2,716	+1,726
Euro area	+2.4	54.2	− 2.5	61.2	−3,807	+1,630
thereof:						
Germany	*+1.0*	*32.3*	*− 3.0*	*40.5*	*−4,569*	*+ 898*
Italy	*+2.7*	*8.5*	*− 6.4*	*7.1*	*+ 830*	*+ 401*
France	*+2.2*	*4.5*	*−12.9*	*3.7*	*+ 439*	*+ 370*
Non-euro area countries	+5.8	45.8	− 4.4	38.8	+4,126	+2,450
thereof:						
Switzerland						
and Liechtenstein	*+1.2*	*5.6*	*+ 2.9*	*3.5*	*+1,241*	*− 17*
Eastern Europe[2])	*+8.0*	*17.6*	*− 1.4*	*13.7*	*+2,299*	*+ 855*
U.S.A.	*+4.1*	*5.3*	*− 4.4*	*5.0*	*+ 177*	*+ 251*
Japan	*−0.5*	*1.1*	*−11.0*	*2.2*	*− 570*	*+ 148*
Total	+3.9	100.0	− 3.3	100.0	+ 319	+4,079

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 to 3rd quarter 2001[1])	1st to 3rd quarter 2002[2])	Annual change	
	EUR million		%	
Travel				
Receipts	9,089	9,715	+ 626	+ 6.9
Expenditures	7,608	8,271	+ 663	+ 8.7
Balance	1,481	1,444	− 37	− 2.5
International passenger transport				
Receipts	1,542	1,570	+ 28	+ 1.8
Expenditures	724	621	− 103	−14.2
Balance	818	950	+ 132	+16.1
	1,000		%	
Foreign tourist overnight stays	*71,962*	*73,516*	*+1,554*	*+ 2.2*

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

Table 4

Foreign Tourist Bednights by Country of Origin

	1st to 3rd quarter 2002			
	Overnight stays	Annual change		Share
	1,000		%	
Germany	45,719	+ 638	+ 1.4	62.2
Netherlands	7,364	+ 425	+ 6.1	10.0
United Kingdom	2,819	+ 149	+ 5.6	3.8
Belgium, Luxembourg	2,142	+ 103	+ 5.0	2.9
Switzerland, Liechtenstein	2,714	+ 157	+ 6.1	3.7
Denmark	916	+ 24	+ 2.7	1.2
Italy	2,386	+ 149	+ 6.6	3.2
France	1,412	+ 103	+ 7.9	1.9
Sweden	580	− 2	− 0.4	0.8
Spain	374	− 30	− 7.5	0.5
Poland	741	+ 37	+ 5.2	1.0
Hungary	718	+ 64	+ 9.9	1.0
Czech Republic	658	+ 10	+ 1.5	0.9
Croatia	213	+ 1	+ 0.4	0.3
C.I.S.	427	+ 53	+14.3	0.6
Slovenia	160	+ 1	+ 0.3	0.2
Slovak Republic	137	+ 7	+ 5.5	0.2
U.S.A.	1,073	− 290	−21.3	1.5
Japan	376	− 72	−16.1	0.5
Other countries	2,587	+ 26	+ 1.0	3.5
Total	73,516	+1,554	+ 2.2	100.0
Memorandum item: Austrian tourists	*26,169*	*− 311*	*− 1.2*	*x*

Source: Statistics Austria.

Table 5

Investment Income

	1st to 3rd quarter 2001[1]	1st to 3rd quarter 2002[2]	Annual change
	EUR million		
Net investment income[3]	− 2,955	− 1,832	+1,123
Investment income receipts	9,693	9,745	+ 52
Investment income payments	12,648	11,577	−1,071
Net direct investment income[3]	− 1,237	− 1,182	+ 55
Income on direct investment abroad	1,227	1,565	+ 338
Income on direct investment in Austria	2,464	2,747	+ 283
Net portfolio investment income[3]	− 2,519	− 2,368	+ 151
Income on foreign equity securities	137	313	+ 176
Income on domestic equity securities	183	239	+ 56
Income on foreign bonds and notes	3,458	3,802	+ 344
Income on domestic bonds and notes	5,745	6,289	+ 544
Income on foreign money market instruments	69	84	+ 15
Income on domestic foreign market instruments	256	38	− 218
Net other investment income[3]	801	1,718	+ 917
Other investment income[4] receipts	4,802	3,982	− 820
Other investment income payments	4,001	2,264	−1,737
Investment income on foreign interest-bearing investment[5]	8,383	7,910	− 473
Investment income on domestic interest-bearing investment[6]	10,008	8,593	−1,415
Investment income on foreign venture capital-oriented investment[7]	1,310	1,835	+ 525
Investment income on domestic venture capital-oriented investment[7]	2,640	2,984	+ 344
Memorandum item: Financial derivatives based on interest rate contracts[8]	717	698	− 19

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 to 3rd quarter 2001[2])	1st to 3rd quarter 2002[3])
	EUR million, net			
Financial account	4,679	4,194	3,273	− 2,775
Assets	−52,276	−21,762	−17,258	−19,185
Liabilities	56,955	25,957	20,531	16,410
Direct investment	3,365	3,195	2,192	− 3,612
Direct investment abroad	− 6,230	− 3,408	− 2,844	− 4,794
Equity capital	− 5,388	− 2,613	− 2,456	− 3,657
Reinvested earnings	− 129	− 705	− 370	− 994
Other capital	− 713	− 90	− 18	− 142
Direct investment in Austria	9,595	6,603	5,036	1,181
Equity capital	8,494	4,115	3,979	− 87
Reinvested earnings	944	1,562	1,188	1,391
Other capital	156	927	− 131	− 122
Portfolio investment	3,229	5,164	15	− 3,623
Portfolio investment in foreign securities	−29,167	−13,267	−11,894	−22,391
Equity securities	−16,959	− 1,277	− 24	− 3,715
Thereof: mutual fund shares	− 5,745	− 1,365	− 618	− 484
Bonds and notes	−11,441	−12,403	− 9,734	−15,126
Money market instruments	− 767	412	− 2,135	− 3,550
Portfolio investment in domestic securities	32,395	18,431	11,908	18,768
Equity securities	3,857	− 4,787	− 4,349	1,723
Thereof: mutual fund shares	1,205	1,004	561	730
Bonds and notes	26,738	25,989	17,965	17,308
Money market instruments	1,801	− 2,771	− 1,707	− 263
Other investment	− 2,489	− 5,885	− 1,540	3,911
Assets	−17,187	− 6,699	− 4,972	7,494
Trade credits	− 2,234	308	188	− 137
Loans	− 9,948	− 6,808	− 7,776	− 5,388
Currency and deposits	− 4,994	562	3,087	12,999
Other assets	− 11	− 762	− 472	20
Liabilities	14,698	814	3,432	− 3,582
Trade credits	502	− 562	− 532	− 350
Loans	4,302	719	− 1,626	1,535
Currency and deposits	9,686	649	5,545	− 4,602
Other liabilities	208	9	46	− 166
Financial derivatives	− 263	− 347	575	− 1,112
Reserve assets[4])	838	2,067	2,031	1,662
Memorandum item: Interest-bearing investment	*13,760*	*8,262*	*5,500*	*2,760*
Assets	*−29,900*	*−16,804*	*−14,213*	*−10,679*
Liabilities	*43,660*	*25,067*	*19,713*	*13,439*
Sectoral breakdown: **Banks (including the OeNB)**	18,191	− 1,943	1,725	− 46
Assets	−17,532	−11,568	− 5,092	− 2,339
Liabilities	35,723	9,624	6,817	2,293
General government	8,465	9,781	7,436	7,625
Assets	− 2,948	− 361	− 4,331	− 2,567
Liabilities	11,413	10,143	11,766	10,191
Other sectors	−21,976	− 3,644	− 5,887	−10,300
Assets	−31,796	− 9,834	− 7,835	−14,279
Liabilities	9,820	6,189	1,948	3,980

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			Investment in/ from non-euro area countries		
	2001[2])	1st to 3rd quarter 2001[2])	1st to 3rd quarter 2002[3])	2001[2])	1st to 3rd quarter 2001[2])	1st to 3rd quarter 2002[3])
	EUR million, net					
Financial account	− 317	12,710	7,883	4,511	− 9,437	−10,658
Assets	− 6,942	− 3,011	− 6,988	−14,820	−14,247	−12,197
Liabilities	6,625	15,721	14,871	19,332	4,810	1,539
Direct investment	2,448	2,482	155	747	− 290	− 3,767
Direct investment abroad	− 77	330	− 387	− 3,331	− 3,174	− 4,407
Direct investment in Austria	2,525	2,152	542	4,078	2,884	639
Portfolio investment	6,638	7,796	− 1,716	− 1,474	− 7,781	− 1,907
Portfolio investment in foreign securities	− 5,144	− 3,440	−16,132	− 8,123	− 8,454	− 6,259
Portfolio investment in domestic securities	11,781	11,235	14,416	6,650	673	4,352
Other investment	−10,096	1,510	10,358	4,211	− 3,050	− 6,447
Assets	− 2,157	− 930	9,751	− 4,542	− 4,042	− 2,257
Liabilities	− 7,939	2,441	607	8,753	991	− 4,189
Financial derivatives	426	660	− 914	− 773	− 85	− 198
Reserve assets[4])	×	×	×	2,067	2,031	1,662

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: +.*

— Net new investment by Austrians was chiefly in the form of euro-denomi-
   nated debt securities issued by euro area residents.
— Institutional investors and banks continued to be the largest groups of
   domestic investors; they bought above all foreign debt securities.
— Foreign investors continued to purchase domestic securities issued by
   general government entities.

Isabel Winkler

1 International Capital Market Developments

In the third quarter of 2002, long-term interest rates declined significantly both
in the euro area and in the United States. Yields of ten-year U.S. treasuries
decreased from 4.93 to 3.87% (average over period p.a.) and those of ten-year
German government bonds from 5.02 to 4.38%. Following this downward
trend, the benchmark yield of Austrian government bonds reached 4.5% in
September 2002 (June 2002: 5.19%). Thus, the Austrian yield gap vis-à-vis
Germany continued to run to about 20 basis points during July, August and
September 2002.

Chart 1

Long-Term Government Bond Yields[1)]

Period average in % per annum

Euro area
Germany
Austria
United States
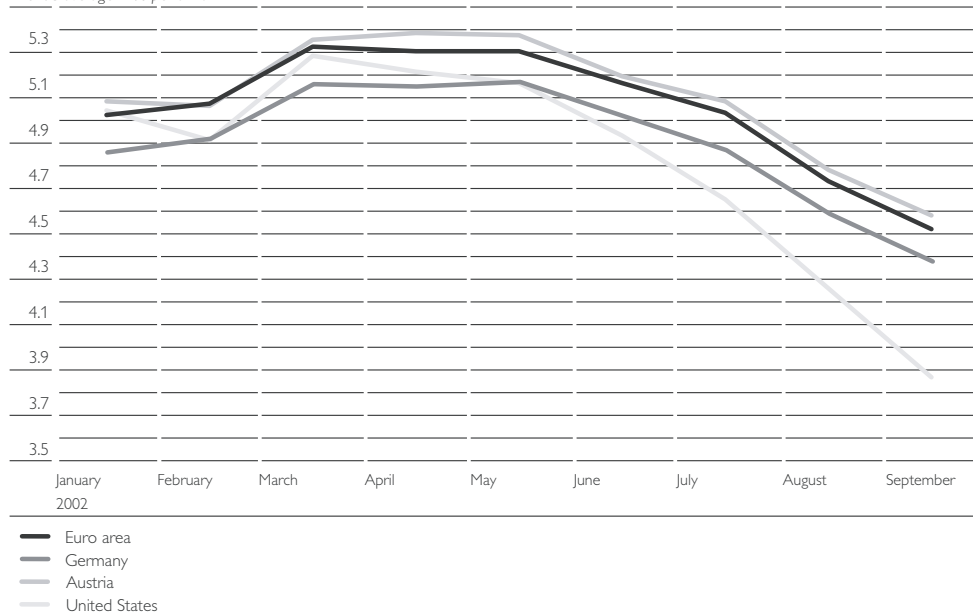
Source: OeNB.
[1)] Secondary market yields on ten-year government bonds.

The reasons for the strong demand for government bonds include the weak
economic performance, the ensuing downward revision of inflation expect-
ations as well as the resulting downward trend on stock markets. The continued
sharp decline of stock prices led to a flight to quality, reflecting the considerably
lower default risk of government bonds.

1 Regular reporting started with the article on "Austria's Portfolio Investment Position — The Globalization of
   Securities Investment and its Impact on Austria" published in issue 4/2002 of Focus on Austria.

US Dollar/Euro Closing Exchange Rate

Source: OeNB.
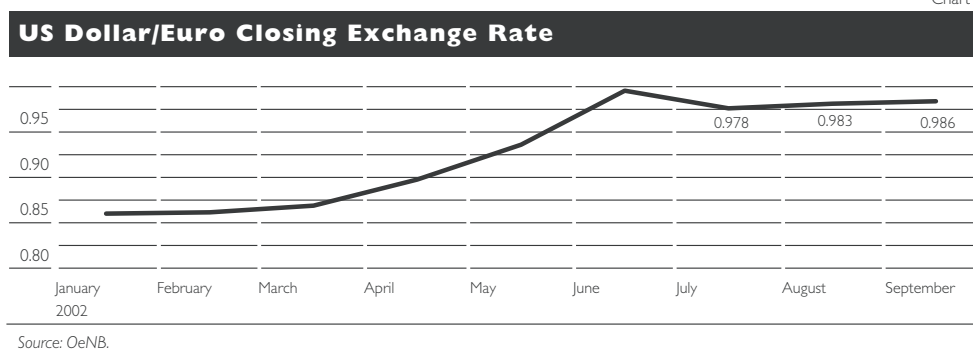
The exchange rate of the U.S. dollar against the euro stabilized in the 0.978 to 0.986 cent range in the course of the third quarter.

2 Portfolio Investment Position Data for Austria[1])

2.1 Domestic Holdings of Foreign Debt Securities (Portfolio Assets)

At the end of June 2002, Austrian holdings of foreign debt securities came to EUR 106 billion and consisted mainly of bonds and notes (EUR 102 billion). From July to September 2002, domestic investors purchased foreign debt securities for another EUR 2.6 billion. Benefiting from positive exchange rate and securities price effects in the third quarter of 2002, foreign portfolio assets actually expanded by EUR 4.3 billion to EUR 110 billion until end-September 2002.

A sectoral breakdown of foreign portfolio assets at the end of September 2002 reveals that as in previous years, Austrian institutional investors[2]) were the largest group of investors (49%), followed by the banking sector (OeNB and banks, holding a share of 43%). These two groups of investors were also the leading players on the capital market from July to September 2002, purchasing foreign debt securities worth EUR 3 billion. At the same time, general government entities and households were selling foreign securities.

At the end of June 2002, 65% of the stock of foreign portfolio assets were debt securities issued by euro area residents. Securities issued in Germany accounted for the lion's share thereof, followed, by a large margin, by bonds and notes from the Netherlands, Italy and France. As to debt securities issued by non-euro area residents, Austrians primarily opted for securities issued in the U.S.A., the United Kingdom and Denmark. Net new investment of Austrians in the third quarter of 2002 was chiefly in the form of securities issued by euro area residents. Taking into account valuation effects, domestic holdings of bonds and notes issued by euro area residents came to EUR 69 billion by end-September 2002, compared with EUR 36 billion worth bonds and notes issued by other nonresidents.

---

1   More detailed data on Austria's portfolio investment position are available on the OeNB's website (www2.oenb.at/stat-monatsheft/englisch/chapter07_p.htm).

2   This sector comprises insurance companies, pension funds and other financial institutions, such as mutual funds.

Foreign short-term debt securities display a different pattern. At the end of June 2002, money market instruments issued by euro area residents accounted for 67% of the stock of money market instruments in Austrian investors' portfolios. With redemptions exceeding new investment in the following three months, this share shrank to 65% or EUR 3 billion by the end of September 2002. At the same time, investors were net buyers of money market instruments issued by non-euro area residents. Thus, Austrian investors held money market paper issued by nonresidents worth EUR 1.6 billion at end-September 2002.

An analysis by currency of domestic holdings of foreign debt securities reveals that by end-June 2002, 75.6% of Austrian holdings of debt securities issued by nonresidents were denominated in euro. New investments in the third quarter of 2002 pushed this share to 76.3%. At the same time, domestic investors increased their holdings of foreign money market instruments denominated in euro from EUR 3.8 billion (84%) at end-June 2002 to EUR 4 billion (86%) at the end of September 2002.

Concerning the regional and currency allocation of foreign portfolio assets, a cross classification analysis provides the following picture for the third quarter of 2002:

– Austrian investors purchased euro-denominated debt securities issued by euro area residents and benefited from positive securities price effects.
– They sold bonds and notes issued by euro area residents and denominated in a foreign currency (i.e. not euro-denominated), causing their holdings to contract despite securities price and exchange rate gains.
– They purchased euro-denominated securities issued by foreign (i.e. non-euro area) residents and benefited from securities price gains.
– They sold bonds and notes issued by non-euro area residents and denominated in a foreign currency but increased their holdings nonetheless because of positive price and exchange rate effects.

Chart 3

Domestic Holdings of Foreign Debt Securities

at End-September 2002

Source: OeNB.
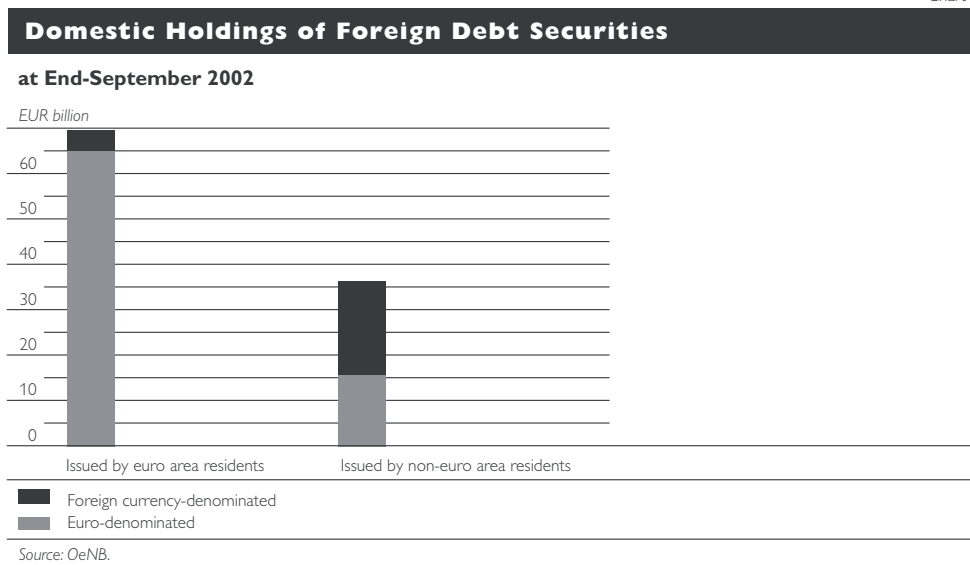
Thus, Austrian investors' portfolios comprised the following holdings at end-September 2002: 61% of Austrian holdings of foreign debt securities were issues of euro area residents and denominated in euro, 15% were euro-denominated securities issued by non-euro area residents, 4% were issued by euro area residents and denominated in a foreign currency, and 19% were issued by non-euro area residents and foreign currency-denominated.

2.2 Foreign Holdings of Austrian Debt Securities (Portfolio Liabilities)

At end-June 2002, foreign investors held Austrian debt securities worth EUR 191 billion, 96% (EUR 184 billion) of which were bonds and notes. In the course of the third quarter of 2002, foreigners purchased debt securities for another EUR 1 billion. Like portfolio assets, however, portfolio liabilities were also affected by positive securities price and exchange rate effects in the third quarter of 2002. Thus, foreign holdings of Austrian debt securities actually came to EUR 196 billion at the end of September 2002.

As in previous years, public sector issues were highest in demand by foreign investors. At end June-2002, nonresidents held public sector issues amounting to EUR 93 billion. Further net purchases in the third quarter of 2002 and mainly positive price effects pushed foreign portfolio liabilities up to EUR 98 billion, which corresponds to 50% of nonresident creditors' holdings of Austrian debt securities.

Domestic securities issued by banks display a different pattern. From July to September 2002, foreign investors were selling securities issued by Austrian banks. As a result, foreign investors' holdings of such assets further shrank to EUR 78 billion in spite of positive price and exchange rate effects. In this category, developments were mixed in 2002. At end-2001, foreign investors had held securities issued by Austrian banks worth EUR 75 billion. As it was the case with public sector issues, net purchases offset adverse securities price effects in the first quarter of 2002. By the end of June 2002, however, investors' holdings had contracted, as negative exchange rate effects were exceeding net securities purchases. In the third quarter of 2002, the decline in investors' holdings continued for the reasons outlined above.

Chart 4

Foreign Holdings of Austrian Debt Securities Broken Down by Sector of Issuer

End-of-period data in EUR billion

Legend:
- Banks
- General government

Source: OeNB.
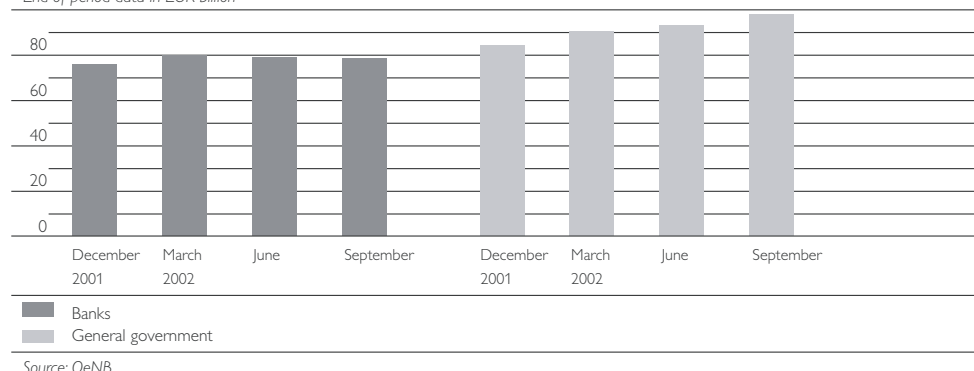
An analysis by currency of foreign holdings of Austrian debt securities reveals that by the end of June 2002, 69% of domestic bonds and notes held by nonresidents were denominated in euro. Thanks to new investments and positive securities price effects in the following three months, foreign holdings of euro-denominated Austrian bonds and notes amounted to EUR 130 billion and continued to account for a share of 69% at the end of September 2002. Debt securities denominated in other currencies also recorded new investment by nonresidents. As a result of new investments and owing to additional positive price and exchange rate effects, Austria's external liabilities in the form of bonds and notes denominated in foreign currencies came to EUR 59 billion.

Between July and September 2002, foreign investors purchased Austrian money market instruments denominated in euro while selling or redeeming domestic money market instruments denominated in other currencies. At end-September 2002, foreign holdings of domestic money market instruments denominated in euro amounted to EUR 1.9 billion and foreign holdings of short-term fixed-interest securities denominated in foreign currencies came to EUR 5.2 billion.

Finance for Growth

Finance for Growth, Finance and Growth, Finance or Growth…?
Three Perspectives on the Interaction of Financial Markets and the Real Economy

Peter Mooslechner[1]

I The Century of Financial Markets?

Historians scrambled to label the 20th century even before it had drawn to a close and even though one might argue that the rather chance unit of 100 years does not really befit such an exercise. Eric Hobsbawm (1995) coined one of the most famous and felicitous epithets with "the short twentieth century" spanning the time from the outbreak of World War I to the collapse of the Soviet Union.[2] While this judgment, though persuasively expounded, reflects an interesting perspective of the past century, it is certainly neither the only possible nor the single most important nor the only fitting one.

Inspired by Hobsbawm's approach, one may engage in an experiment, asking what has shaped the economy and economic policymaking in the past century. Just like historians, economists very likely will come up with an array of answers to this question. Not least because a host of special factors — two world wars, repeated arms races, hyperinflation, the Great Depression, the post-war upswing, two oil price shocks and the New Economy — combine to produce too heterogeneous a picture to capture the entire century in one catchall phrase.

Nevertheless, observers may find at least one common theme running through the 20th century: the development of financial markets. Cases in point are the dynamic growth and multifaceted specialization on financial markets in the second half of the century, developments at the beginning of the century (Obstfeld and Taylor, 1997) and the slide into the Great Depression, its severity and duration (Kindleberger, 1973). At the same time, the evolution of the international monetary system from the gold standard via Bretton Woods to the European monetary union likewise left its mark on the 20th century and its financial history (Eichengreen, 1998).

A quick look at some empirical developments may illustrate the dynamic growth and differentiation of the financial markets over the last decades (see Annex):

— international foreign exchange market turnover has risen to daily figures well beyond USD 1,000 billion, a volume often cited to show the rising gap between (international) financial market activity and real transactions;

— the rapid growth of derivatives markets — to a daily turnover of about USD 1,400 billion in April 2001 — and a shift from foreign exchange to interest contracts constitute a clear element of higher market differentiation and risk exposure;

— the internationalization of the banking system illustrates another stylized fact of financial market development, with foreign assets and assets denominated in foreign currency of the banking sector reaching USD 12,270 billion in 2000 compared to just USD 2,582 in 1983;

2 In contrast, the 19th century appears to have been "long from his point of view," having lasted roughly from 1780 to 1914.

— international bond and stock market transactions data of industrial countries as measured by balance of payment statistics show a similar marked rise, also in relation to nominal GDP growth;

— strong growth of stock market capitalization – from USD 4,520 billion in 1990 to USD 18,846 billion in 2001 – and even more pronounced growth in stock market turnover to USD 30,643 billion in 2001 compared to only USD 2,950 billion in 1990 – illustrate the importance of financial market growth also from the domestic perspective;[1])

— the same is true for the long-term development of households' financial assets, which have risen substantially not only in absolute figures but also in relation to nominal GDP over the last four decades – very much related to the particular framework conditions after World War II, perhaps being a historic exception.

Although it is very difficult or almost impossible to come up with consistent time series on financial market developments for the entire century, there is an interesting discussion looking at changes in global capital market inter-dependencies from a historical perspective. For example, Obstfeld and Taylor (2002) favor the so-called "U-shape" hypothesis, arguing that vigorous inter-national capital flows were seen already in the late 19th century and at the beginning of the 20th century.[2]) After the setbacks brought on by the two world wars, the Great Depression and the restriction on capital flows related to the Bretton Woods system, the recent rise in international capital market flows can be interpreted as a return to pre-1900 levels of financial market development in their view.

Kindleberger (1984) contributes an impressive historical account of finan-cial market development and financial market interdependencies, even though he states that "it is not clear that there is a need to justify a financial history of western Europe." He is actually the first to provide a comprehensive history of this kind, and to date similar contributions have been sparse and much more limited in focus. However, it is not by chance that Kindleberger pens the book in that historic period and at the very outset raises the question "Why finance?" He cites that "one may ask whether monetary and financial events and institu-tions matter" as his key motivation for writing this book, thereby implicitly dedicating the whole volume to "finance and growth" – filling a void in the economic literature of his time.

Twenty years on, in 2003, pinning down the theme "finance for growth" to set the stage for the contributions published in this issue is a tall order, partic-ularly in the face of many comprehensive papers and literature surveys shedding light on the theory and empirics of finance and growth (e.g. Pagano, 1993; Levine, 1997; Leahy et al., 2001; Thiel, 2001; Wachtel, 2001; Dolar and Meh, 2002; Giannetti et al., 2002). From the wide range of aspects related to finance

---

1   Stock market capitalization and turnover of the five largest stock exchanges: NYSE, Nasdaq, Deutsche Börse, London and Paris.

2   Although Obstfeld and Taylor and others provide some convincing evidence in this respect, the "quality" of financial development and integration was of a different nature at that time. For example, and compared to the situation in the second half of the 20th century, participation in financial markets and, specifically, in international financial transactions seem to have been limited to a much smaller number of institutions and even fewer (very rich) individuals – as it can be illustrated by considerable lower financial assets to GDP ratios.

Finance for Growth, Finance and Growth,
Finance or Growth . . .?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

and growth the paper highlights three selected issues that are fundamental to find adequate policy prescriptions for economic policy decision-making and which are key to the current discussion. Section 2 centers on the question "Does finance matter?" from a rather theoretical-historical perspective, and section 3 revolves around the essential functions of financial markets and the important characteristics of financial market transactions. Finally, section 4 focuses on the perennial debate of different financial systems. The paper ends with a number of tentative conclusions on the state of our knowledge and on possible economic policy and institutional consequences.

2 Does Finance Matter? – Theory versus History, Reality and Policy

When analyzing financial markets not just at the microlevel but explicitly in a macroeconomic context, a number of interesting gaps related to the role financial markets and financial institutions play in the economy emerge:

(i) Over the past decades economic reality has to a large extent been shaped by financial market shocks and crises. The European monetary union, the implicit redefinition of the IMF's role and the greater importance attached to financial stability in the hierarchy of economic goals have been direct consequences of this situation.

(ii) With economic issues thus reprioritized, economic policymakers all over the world regard financial market developments as a permanent economic policy challenge. Recurring topics for discussion include an adequate regulatory framework for the supervision of financial markets and institutions, effective early warning systems for monetary and financial crises and the implications of asset market instabilities for monetary policy.

(iii) The economic history literature with its long-term perspective attests to the existence of a relevant relationship – both in a positive and negative sense – between financial market and macroeconomic developments. Perhaps this link does not exist at all times, but it is definitely there during particular historical phases. At any rate, this relationship clearly manifests itself in day-to-day economic policymaking, and chances are the general public is also aware of it, at least in times of heavy stock market losses.

(iv) In contrast to the previous three points and the inferred requirements for economic policy action, in economic theory, it is by no means clear whether financial markets and the real economy are indeed related and, if so, in what form and how it ties in with our understanding of macroeconomic theory. A brief rundown of economic theories helps illustrate this peculiar dichotomy and associated "schizophrenia."

Six (excessively simplistic) shortcuts how the relationship between financial markets and the real economy was treated in economic theory:

Adam Smith

When Adam Smith established economics as an autonomous science, he introduced in his broad economic analysis three concepts which have been crucial to economic understanding ever since: (i) methodological individualism, (ii) self-interest as one of the principle forces guiding action and (iii) the market price mechanism ("the invisible hand") as the all-important coordination mechanism.

Apart from a monetary analysis focusing on precious metals and a brief discussion of bank lending, Adam Smith did not cover financial markets. Efficiency and macroeconomic equilibrium are determined by the real economy, and the three basic concepts he introduced are focused on the behavior of market participants and market structure on goods markets; financial transactions do not systematically impact the economic situation.

Rudimentary Finance

Mainstream economic doctrines ranging from classical theories via Keynesian and neoclassical views to real business cycles are generally characterized by merely rudimentary efforts to explicitly integrate financial markets into analysis. Banks, which dominate the financial systems of advanced market economies, are only very seldom modeled as a separate component in macro-economic models.

A case in point is the IS-LM model, which for decades mirrored the textbook consensus on macroeconomic thinking. While this model lacks many essential Keynesian principles, it differs from classical orthodoxy in that monetary factors in fact are seen to have an influence on the determination of the interest rate. Yet, even though a rudimentary securities market is thus implied in the model, it ignores any independent effect of nonmonetary financial markets on the real sector, e.g. associated with investment financing.

Put very simply, in most of these models implicit financial markets merely accommodate real sector decisions, even in such cases where the model allows for a relationship between monetary conditions and the real economy. Here, it is important to note that modeling the interaction between monetary policy and the real economy does not yet imply that financial markets are accorded a role in their own right.

Financial Market Economics and the Efficient Market Hypothesis (EMH)

While mainstream macroeconomics would decouple financial markets and the real economy, under more limited a focus, financial markets were allocated a significant role in guiding real sector decisions, such as investment decisions. Put differently, financial markets and financial institutions are seen to influence economic decisions from this point of view. Essentially, this is based on the notion that financial market decisions are more efficient compared to decision-making on rigid product markets and that financial market structures are less distorted. In this context, financial markets have a central role to play in controlling and steering product markets, thus helping boost the efficiency of the economy as a whole.

At the same time, financial market economics was long dominated by the efficient market hypothesis (EMH), an idea partly developed by Fama (1970).[1] Under the EMH, an efficient financial market is characterized by asset prices which fully reflect all available information. Empirical evidence was interpreted to show that the existing financial markets, isolated exceptions aside, are indeed efficient consistent with the above definition. The assumptions underlying this model basically "define" efficiency along the lines of three criteria: (i) financial

---

1   For a survey and re-statement at the beginning of the 1990s see Fama (1991).

Finance for Growth, Finance and Growth,
Finance or Growth . . .?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

market players act rationally as a rule; (ii) insofar as rationality is flawed, their behavior is random; (iii) should there indeed be irrational agents, sufficient numbers of rational arbitrageurs cancel out the impact such irrational behavior would have on the market outcome.

The Modigliani-Miller theorem (MMT), which built on the EMH and its far-reaching assumptions, was for a long time the authoritative theorem on the relationship between the financial sector and the real economy in financial market economics. Similarly to what is typical of mainstream macroeconomics, the MMT decouples real sector decisions from financial constellations under a number of extremely rigid assumptions about financial market players and their behavior. In the same vein, financial market economics also ignored the influence of financial market decisions on real sector decisions, including e.g. the link between stock market developments, investment and spending decisions.

Wicksell and Schumpeter

The picture would be incomplete, however, without naming some of the economists who held diverging views and who placed a particular emphasis on the relationship between finance and growth. Yet, even though they captured reality more precisely, such theories have somehow never really caught on as part of an economics canon and never figured broadly in mainstream textbooks. Wicksell and Schumpeter are only two examples in this context.

Wicksell (1913, 1922, 1934), who never followed mainstream economic beliefs, postulates the existence of two distinct rates of interest. The natural rate of interest as the expected return on new capital is determined by the real sector, while the loan rate of interest is affected by the banking market. Divergence between these two interest rates sets in motion a cumulative process of expansion or contraction of income and prices (via investment decisions). In the light of the active role of the loan interest rate, the financial markets have a pivotal function in Wicksell's model. Along similar lines, Schumpeter (1934) accords the banking system a more important role, since it is the banking system which facilitates an economic upswing through its (inflationary) financing of innovative entrepreneurs and thus paves the way for a higher level of equilibrium output.[1]

Minsky

Incorporating financial markets, Minsky's theory of investment makes an effort to give an authentic interpretation of Keynes. His theory, which explicitly accounts for budgetary constraints and financing conditions, builds on the financial framework underlying economic activity. Minsky (1975) distinguishes a mix of fragile financing constellations and at the same time considers cash flows and obligations incurred in the process of building up capital stock. This puts the spotlight on the issue of how to finance investments and on the prevailing financial market situation. Here, Minsky not only extends Keynes (especially the Keynes of the "Treatise"), but also Irving Fisher's (1933) debt

---

1   This "Schumpeter-Connection" is mentioned explicitly in the modern literature on the subject (King and Levine, 1993b).

deflation theory, which, under the influence of the Great Depression, tackles very similar mechanisms.

New Keynesian Economics

Following Greenwald and Stiglitz (1986), a new strand of New Keynesian Economics has evolved since the 1980s. This new strand claims that the core of the Keynesian view need not rely on rigidities and imperfect competition alone but must also reflect the macroeconomic consequences of capital market failures due to asymmetric information. This literature claims that capital market failures have a role in determining the business cycle and the non-neutrality of money even if markets are assumed competitive. Financial factors are considered relevant for self-sustained oscillations of exogenous shocks.

This brief overview of economic theories reveals above all that the question of the role financial markets play in macroeconomic thinking first and foremost hinges on the underlying theoretical model one has in mind. Interestingly, the majority of macroeconomic constructs more or less ignore the impact of the financial sector on the real economy. Vice versa, a considerable portion of financial market economics does not take into account real sector issues. What is strange is that the steering function financial markets are widely assumed to have with regard to real sector decisions is not considered in either perspective. Where specificities of financial market imperfections (microfoundations) are introduced into macroeconomic models such as the New Keynesian models described above, it is not clear whether the deeper implications of the long list of financial market imperfections are addressed adequately by these models – if we think of the impact of deviations from rational expectation equilibria or of bounded rationality. E.g. liquidity preference as a cause of financial market failure is not captured by New Keynesian models. The different causes of financial market failure have different macroeconomic effects: Whereas the liquidity preference implies a downward rigidity of the interest rate in case of excess capital supply, capital rationing which is important in New Keynesian models, implies an upward rigidity of the interest rate in the event of excess capital demand (Delli Gatti and Tamborini, 2000).

Besides, this simplified historical-theoretical rundown accentuates why it is so difficult in economic analysis to factor current financial market developments into the macroeconomic context. Not only can financial market developments hardly be explained systematically by means of traditional approaches, but their general implications for growth and employment are also hard to pin down. However, the growing importance of behavioral finance points to a significant change in this respect. Behavioral finance does not call the fundamentals of financial market economics into question, but merely broadens the perspective by adding real-life market behavior.[1]) Evidently, interaction between rational and less rational market participants results in interesting outcomes. In particular, the cornerstones of financial market efficiency are challenged; under

---

1   For a recent survey of the issues see Shiller (2002), Zwiebel (2002) provides an interesting review of Shleifer's (2000) book. Beside financial economics "Behavioral Economics" has also started to challenge many of the traditional behavioral assumptions in economic theory (Fehr and Falk, 2002; Rabin, 2002; Tirole, 2002).

realistic market conditions, efficiency is but a special case with a low probability (Shleifer, 2000).

3 The Characteristics of Financial Transactions and the Multiple Functions of Financial Markets

Whenever one tackles financial market issues and especially the impact of financial market developments on the real sector, two basic questions inevitably come to mind which are key to understanding this interrelationship:

(i) Do financial transactions differ so much that they need to be treated separately, or is the traditional (product) market model also applicable to financial market analysis?

(ii) What functions do financial markets have in a macroeconomic setting, and in how far are these functions important to economic growth?

The answers to these rather basic questions are important as to in how far and in what form financial markets are to be treated as related to the real sector. And indeed, it makes little sense to pursue the question of the interrelationship of finance and growth any further, as long as the main characteristics of financial transactions are not explicitly accounted for in the analysis. In particular, implicitly equating product and financial markets along the lines of traditional neoclassical microeconomic theory masks the specific characteristics of financial transactions and their potential implications for the real sector.

The bulk of transactions on product markets may be classified as spot transactions. Here, sellers and buyers interact on the market for a mere moment, reach agreement on the type of product and its price and do not have to see each other before or after the transaction.

Financial transactions are fundamentally different. Acquiring a financial asset or incurring a financial obligation (in the form of debt) invariably goes hand in hand with the establishment of a relationship between buyer and seller for a given period of time – any financial asset or liability exists not only here and now, but also has a history and future. To give an example, when an investor buys a debt security, this additional asset in his balance sheet is (a) directly linked with the debt the issuer incurs by issuing this security and (b) interconnects buyer and issuer until they decide to alter their respective balance sheet positions. The buyer of the security expects the seller to deliver on the agreed cash flows, i.e. interest payments and redemptions. Besides, the buyer usually takes a keen interest in the economic situation of the issuer. If the issuer runs into difficulties, the buyer may face a substantial financial loss, even though the original acquisition took place years or decades before. This contrasts completely with, say, a book purchase, where the buyer is indifferent to any problems the seller or issuer of the book may have five minutes after the transaction.

Financial transactions differ fundamentally from transactions on product markets, with the inherently forward-looking nature of financial transactions probably the most striking difference. Information on the past and present state of markets and products is much less important for financial market than for product market transactions. Instead, financial transactions are very much governed by expectations, which is attributable to the above-mentioned creditor-debtor relationship. Price formation on financial markets is therefore chiefly led by expectations, from which follows: (i) very rigid assumptions on how expect-

ations come about aside, efficient fundamental equilibria are likely to be the exception rather than the rule; (ii) besides, market participants' expectations may be presumed to be rather volatile and thus related to greater financial market instability. These perceptions are not only borne out by present-day financial market developments, but also figure prominently in modern theory on financial markets.

Of course, this stylized picture of differences between (dominant) characteristics of transactions on financial markets and goods markets can be taken as a first step only. For example, warranties on durable consumer goods and, in general, real investment decisions – in particular investment in new products and new technologies – show considerable similarities with characteristics of financial transactions. On the other hand, there are a number of financial transactions – e.g. payment services and short-term transactions on stock and on foreign exchange markets – which come very close to the characteristics of spot transactions. Therefore, a much more detailed analysis of transaction characteristics would be necessary, distinguishing above all between the short-term and the long-term orientation of transactions as well as their immediate consumption or investment characteristics both on goods and financial markets.

In addition to transaction characteristics, financial market participants' motives may be very diverse and may vary considerably over time. Taking on additional debt may, for instance, be motivated by the wish to realize a highly profitable investment project or to cushion losses resulting from past misdirected investment. To be able to make an informed decision on whether to conduct a given transaction or not, additional information is necessary and information asymmetries frequently pose a problem. In essence, the simple fact that a borrower is not necessarily allowed to borrow more money if he pays a higher interest rate attests to these difficulties; thus, it would be a fallacy to assume that credit was theoretically infinite. Likewise, a multitude of motives, such as precaution, liquidity preference, profitability, speculation, retirement provision or inheritance may guide investors in their decision whether or not to conduct a transaction, which also explains the vast variability in decision-making. Also, at different points in time, one and the same investor's decisions are determined by different factors.

In general, the market mechanism on financial markets is highly complex. Various perspectives on the concrete functions of the financial system and how they are presented in the discussion of bank-based versus market-based systems bear testimony to this fact. The categories of financial market functions provided by Leahy et al. (2001) basically capture the wide range of views on this topic:
(i) Mobilizing savings
(ii) Diversifying risk
(iii) Allocating savings to new (investment) projects
(iv) Monitoring the allocation decision of managers.

Tobin (1984) explicitly relates this largely undisputed structure of financial market functions to the macroeconomic perspective and endeavors to classify these concepts according to their contribution to overall economic efficiency.

Traditional equilibrium-oriented economic theory generally accepts financial markets as a blueprint for ideal markets and efficient price formation. In real life, however, financial markets are increasingly seen as a source of volatility and instability (Shiller, 2000). In this respect, Tobin distinguishes between three basic concepts: (i) *Information-arbitrage efficiency* means that financial market players use all available information, which leads to efficient price formation; (ii) *fundamental-valuation efficiency* postulates that market efficiency is guaranteed in that the valuation of any asset reflects accurately the discounted stream of future payments to which the asset gives title; and, finally, (iii) *full-insurance efficiency* in an Arrow-Debreu economy posits that any agent is at all times capable of hedging against any feasible future contingency.

Tobin points out that these concepts, while lending themselves to describing specific functions and efficiency aspects of financial systems, fail to exhaustively define "macroeconomic efficiency." This is so because they ignore the very core function (i.e. financing function) of financial markets, which consists in the transfer of savings to investors. For this reason, Tobin suggests to add another concept, namely (iv) *functional efficiency,* centering on the efficient transfer of funds with a view to financing investment. In this perspective, financial markets are directly related to the real sector; thus, any factors determining the transfer of funds from investors to debtors are relevant to overall economic performance. Disruptions and inefficiencies in this transfer process may reduce the level of investment, thus translating into a lower growth path for the economy.

The great complexity of this issue is illustrated by the fact that these efficiency concepts cannot be seen as mutually exclusive; to the contrary, it makes sense to apply them simultaneously and with considerable overlaps. Emphasizing, for instance, functional efficiency by no means suggests that, say, information-arbitrage efficiency may be neglected, because the latter may also contribute to functional market efficiency. It is, however, very unlikely that there are no conflicts between the individual efficiency concepts and that all four dimensions could be met simultaneously and completely by efficient financial markets. Again, it all depends very much on which approach towards financial market functions is selected and on what framework conditions are deemed to be conducive to efficiency. Interestingly, each of these concepts presumes completely different repercussions of finance on growth.

4 Financial Systems – Europe versus U.S.A.

One of the most important debates – both from an economic and a political perspective – sparked at the end of the past century revolves around financial systems, basically the juxtaposition of the "American" and the "European" model.[1]) It comes on the heels of vigorous deregulation and financial market liberalization (Edey and Hviding, 1995; Stiglitz, 2000) and has spawned a number of important issues in Europe, such as the need of the European banking system for structural adjustments, the strengthening of Europe's capital markets and the discussion of Basel II and its implications.

---

1   *In a much broader context, the discussion on the differences between and the importance of financial structures goes back to the path-breaking analyses by Goldsmith (1969), Gurley and Shaw (1955) and McKinnon (1973).*

While the bursting of the New Economy bubble and the crisis in stock markets somewhat dampened the one-sided tendency to advance the U.S. model, according to which financial market structures are to be geared primarily to the capital market, the issues driving this debate continue to influence financial system design – on both sides of the Atlantic.

Two contrasting models of corporate governance, i.e. the outsider and insider system, are at the center of this discussion. In the outsider system, the supervisory board representing the company owners exercises little immediate control over the company's management ("arm's length relationship"). Instead, corporate control is exercised primarily via the capital market. If the company is poorly managed and the shareholder value diminishes, investors react by selling company shares, exposing the company to hostile takeovers. In the insider system, the owners take an active role in corporate governance, with the main groups of owners and stakeholders represented in the supervisory board.

As is evident from this stylized differentiation of corporate governance regimes, the smooth functioning of the models depends on the structure and developmental stage of the financial markets.

Banks play a particular role in this respect, which is reflected in the distinction between market-based and bank-based financing structures. In the United States and in the United Kingdom, companies rely heavily on the capital market, whose mechanisms also determine corporate governance. By contrast, in central Europe banks play a pivotal role given the greater significance attached to debt financing. As to the efficiency of the models, in the literature we find about as many arguments for as against either of the two models. Modern theory on corporate finance emphasizes the relationship between investment decisions, finance and corporate governance. According to Hellwig (1991), the fact that this decision-making structure was previously ignored is to a large part traceable to the dominant role the Walrasian paradigm of perfect markets played in financial market analysis. This paradigm implies a specific institutional framework which does not allow for the analysis of different financial institutions and financing constellations. The popular Modigliani-Miller theorem demonstrating the irrelevance of financing decisions was at the root of the disregard for financing aspects.

The primacy of this position was not seriously called into question before the latter half of the 1980s, when it was criticized both from a theoretical (e.g. Stiglitz, 1985) and, above all, an empirical perspective (Mayer, 1988). To this effect, it had been necessary to link the three elements finance, information and corporate governance to gain a holistic view of the functions of any given macroeconomic financing system.

In the Anglo-American market-based system, households' excess funds are channeled to investors mainly via the securities markets. As a consequence, we face a comparatively fragmented financing structure, where banks are heavily specialized and nonbank financial intermediation is very important. In the bank-based system, the bulk of financial intermediation is provided by universal banks, which engage both in lending and securities trade and maintain close relationships with the investors. These universal banks provide long-term financing and offer a broad range of financial services to their customers.

Finance for Growth, Finance and Growth,
Finance or Growth...?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

Market-based systems insist on public disclosure, thus facilitating access to corporate information. Many companies tap the capital market and are listed on stock exchanges. In line with strict rules, all market participants have equal access to relevant information. This improves not only the liquidity, but also the allocative and information efficiency of these markets. In contrast, little corporate information is publicly disclosed in the bank-based system. The majority of companies do not use institutionalized markets, with corporate information shared chiefly among agents with long-term (financing) relationships. The lending banks, which play a crucial role in this context, frequently hold stakes in large companies.

By contrast, equity is typically owned by widely dispersed groups in the market-based system. In most companies individual owners wield little influence, and even larger owners seldom exercise direct control over corporate management. Investors have an overriding objective, which is to maximize the return on their portfolio; this objective guides them in their decision to buy or sell their securities. In this way, the transfer of ownership serves as a tool for disciplining management. In the bank-based system, ownership is highly concentrated. The stock exchange and stock prices are less important and hostile takeovers are rare. Governance rights are exercised directly via the supervisory board, in which all the major owners are represented. Banks, which hold a considerable share of voting rights in large companies, figure prominently as well. Major owners' equity interests, in particular, seldom change hands.

Long-term financing relationships, the role of debt financing as an instrument of governance and the advantages of delegated monitoring figure among the merits of the bank-based financial system. Amid incomplete contracts, mechanisms fortified by long-term relationships reduce moral hazard problems between providers of finance, managers and employees. Against the backdrop of implicitly long-term contracts among the parties involved, it is possible to follow through on long-term corporate strategies, such as research and development, large-scale investment projects and staff education and development.

The positive effect on debt financing resulting from strengthening corporate governance appears to be largely undisputed in the literature. Company owners and providers of finance are expected to disagree on corporate governance (Aghion and Bolton, 1992), which is why restricting governance to ownership control will probably not automatically lead to optimal outcomes from a macroeconomic perspective. Owners and providers of finance by definition seek different types of corporate information, and only all the information put together provides the large picture necessary for effective corporate control.

With Diamond (1984) as a clear point of departure, the role of banks as delegated monitors of the corporate sector has come to the forefront in the corporate governance literature. Producing additional information is regarded as the key to overcoming information asymmetries prevailing between the providers of finance and corporate management. In this respect, financial intermediaries seem to have an edge over securities markets owing to economies of scale and institutionalized constancy. What is more, delegated monitoring covers the entire group of companies using intermediated financing. The most serious constraint on the monitoring and control function of financial intermediaries is, however, that the available information and any ensuing consequences

Finance for Growth, Finance and Growth,
Finance or Growth . . . ?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

do not immediately become transparent to the original investors. In the case of delegated monitoring, governance rights are exercised on the basis of a fictitious mandate and in the interest of all investors.

Empirical studies provided the necessary impetus to raise the profile of these aspects in the economic literature. Cable (1985) was among the first to demonstrate that countries where banks are well-established providers of finance and where close interlinkages exist between banks and industrial companies show better growth performance. Furthermore, the fact that even in the countries with the most advanced securities markets, such markets contribute only marginally to corporate investment financing (Mayer, 1988; Franks and Mayer, 1994) underlined this empirically. In the end, the interrelationship between the structure of the financing system and the performance of the economy as a whole was explored further, which resulted in a long-run growth and development perspective (King and Levine, 1993a, 1993b, 1993c).

Bank behavior is said to be the main drawback of bank-centered financing structures (Edwards and Fischer, 1994). Here, especially lack of transparency, insider problems, vested interests and conflicts of interest of financial intermediaries representing all investors as well as inefficient monitoring and corporate control draw criticism despite of the theoretical advantages of the bank-based model.

Interestingly, despite the pronounced differences between the bank-based and the market-based model, the current trend in the economic literature is to attest neither of the two models any particular advantage as to economic growth performance (e.g. Beck and Levine, 2001). Researchers have increasingly been focusing on the general developmental stage of the financial markets and financial institutions of a country, relatively independent of which model the financial system is based on. Well-developed financial markets appear to have a positive impact on overall economic performance, while effects of certain financial market specializations are increasingly deemed to be less important.

However, this is not to say that structural factors are completely inconsequential to the efficiency of financial systems. More emphasis is, for instance, being placed on institutional differences, such as fundamental differences in legal systems. Also, the financial market structure may influence the ease with which distributive effects of finance as to given types of companies (e.g. according to their size) or to the type of activity to be funded (e.g. innovations and research) can be financed.

5 Financial Markets and the Economy: Some Tentative Conclusions

Financial market developments, in particular financial market growth and a marked differentiation of financial products, have shaped the economic situation of the 20th century to a considerable extent. Although the framework conditions for this development after World War II may have been very specific, in general, historical experience makes it rather unlikely that there is no interrelationship between financial market developments and the real economy, or only a negligible one.

Surprisingly enough, mainstream economic theory as well as financial economics have considerable problems in sufficiently integrating financial

Finance for Growth, Finance and Growth,
Finance or Growth...?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

markets into macroeconomic analysis. At the same time, economic policy-makers had and have to regard financial market developments as a growing and permanent economic policy challenge. More recent theoretical developments, although far from belonging to mainstream economic thinking (e.g. Behavioral Finance), try to react to this challenge and to give financial markets an independent new role. The role financial markets are allowed to play in the context of macroeconomic thinking, and consequently in policy suggestions based thereon, implicitly hinges first and foremost on the underlying theoretical model.

Contrary to the extensively discussed differences between bank-based and market-based financial systems, nowadays the overall degree of development of a financial system is seen to be the important factor. Well-developed financial markets are very likely to have a positive influence on economic performance, to a large extent independently of a specific structure of a financial system. In addition, institutional differences – e.g. in the legal system – are considered to explain the main differences in how financial systems work and how efficient they are. Structural features of financial systems do play a role for the efficiency of financial systems also, but these are mainly related to specific distributive effects of financing depending on the type of firm (e.g. a small versus a large firm) or the type of financing (e.g. financing of innovations versus financing of traditional sectors).

The specific characteristics of financial transactions as compared to (most) transactions on goods markets call for a particular theoretical treatment of these markets and transactions in economic analysis, unlike traditional microeconomic theory, which is clearly intended to focus on short-term goods market equilibria. As a consequence of the particular characteristics of financial markets and financial market behavior, price formation on financial markets is dominantly expectation-determined, leading to a rather volatile market situation and greater financial market instability.

The functional efficiency of a financial system, centering on the efficient transfer of funds with a view to financing investment, directly relates financial markets to the real economy. Almost by definition, functional efficiency takes the priority a financial system needs to fulfill from a macroeconomic point of view. Factors determining the transfer of financial funds to investors are essential for the potential level of investment and the growth path of the economy to be realized. Other concepts of financial market efficiency – e.g. information arbitrage, fundamental valuation or full-insurance efficiency – perform important functions as well and therefore must not be neglected. However, it appears very unlikely that in reality all these concepts of efficiency may be achieved in an overall equilibrium simultaneously, therefore a certain challenge arises in selecting the efficiency concept to be given priority depending on the economic situation and the economic policy needs to be addressed.

Combining the different historical, economic policy and financial market perspectives, there seems to be a clear need for a paradigm shift in economics, in the direction of a macroeconomic theory integrating financial markets and their impact on real developments into the core of the analysis.

Finance for Growth, Finance and Growth,
Finance or Growth...?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

References

Aghion, Ph., Bolton, P. (1992). An Incomplete-Contract Approach to Financial Contracting. In: Review of Economic Studies, October.

Beck, Th., Levine, R. (2001). Stock Markets, Banks, and Growth: Correlation or Causality. World Bank and University of Minnesota, July.

Cable, J. (1985). Capital Market Information and Industrial Performance. In: The Economic Journal, 95, March.

Coase, R. (1988). The Firm, the Market and the Law. The University of Chicago Press.

Davidson, P. (1978). Money and the Real World. London, Macmillan.

Delli Gatti, D., Tamborini, R. (2000). Imperfect Capital Markets: A New Macroeconomic Paradigm? In: Backhaus, R., Salanti, A. (eds.). Macroeconomics and the Real World, Oxford, Vol. 2, 169–202.

Demirgüc-Kunt, A., Maksimovic, V. (2002). Funding Growth in Bank-Based and Market-Based Financial Systems: Evidence from Firm-Level Data. In: Journal of Financial Economics, 2.

Diamond, D. (1984). Financial Intermediation and Delegated Monitoring. In: Review of Economic Studies, 51.

Dolar, V., Meh, C. (2002). Financial Structure and Economic Growth: A Non-Technical Survey. In: Bank of Canada, Working Paper No. 2–24.

Edey, M., Hviding, K. (1995). An Assessment of Financial Reform in OECD Countries. In: OECD Economic Studies, 25.

Edwards, J., Fischer, K. (1994). Banks, Finance and Investment in Germany. Cambridge University Press.

Eichengreen, B. (1992). Golden Fetters: The Gold Standard and the Great Depression, 1919–1939. Oxford University Press, New York.

Eichengreen, B. (1998). Globalizing Capital. A History of the International Monetary System. Princeton University Press.

Eichengreen, B. (2000). Vom Goldstandard zum Euro. Klaus Wagenbach Verlag, Berlin.

Fama, E. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. In: Journal of Finance, 25.

Fama, E. (1991). Efficient Capital Markets: II. In: Journal of Finance, 46.

Fehr, E., Falk, A. (2002). Psychological Foundations of Incentives. In: European Economic Review, Nos. 4/5.

Fisher, I. (1933). The Debt-Deflation Theory of Great Depressions. In: Econometrica, 1.

Franks, J., Mayer, C. (1994). Ownership and Control. In: Siebert, H. (ed.). Trends in Business Organization: Do Participation and Cooperation Increase Competitiveness? Tübingen.

Friedman, B. M. (1995). Economic Implications of Changing Share Ownership. In: NBER Working Paper, No. 5141.

Gertler, M. (1988). Financial Structure and Aggregate Economic Activity. In: Journal of Money, Credit and Banking, August.

Giannetti, M., Guiso, L., Japelli, T., Padula, M., Pagano, M. (2002). Financial Market Integration, Corporate Financing and Economic Growth, European Commission. In: Economic Papers No. 179.

Giovannini, A. (ed.) (1993). Finance and Development: Issues and Experiences. Cambridge.

Goldsmith, R. (1969). Financial Structure and Development. New Haven.

Goodhart, Ch. (1993). Can We Improve the Structure of Financial Systems? In: European Economic Review, 37(2/3).

Greenwald, B., Stiglitz, J. E. (1986). Externalities in Economies with Imperfect Information and Incomplete Markets. In: Quarterly Journal of Economics, 229–264.

Grosfeld, I. (1994). Financial Systems in Transition: Is There a Case for a Bank Based System? In: CEPR Discussion Paper 1062, London.

Finance for Growth, Finance and Growth,
Finance or Growth . . .?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

Gurley, J., Shaw, E. (1955). Financial Aspects of Economic Development. In: American Economic Review (XLV).

Hahn, F. (2002). Bedeutung von Aktienmärkten für Wachstum und Wachstumsschwankungen in den OECD-Ländern. WIFO, April.

Hart, O. (1995). Corporate Governance: Some Theory and Implications. In: The Economic Journal, May, 678–689.

Hellwig, M. (1991). Banking, Financial Intermediation and Corporate Finance. In: Giovannini, A., Mayer, C. (eds.). European Financial Integration, Cambridge.

Hicks, J. (1989). A Market Theory of Money. Oxford University Press.

Hobsbawm, E. (1995). Das Zeitalter der Extreme, München – Wien (Age of Extremes. The Short Twentieth Century 1914–1991, London 1994).

Hubbard, G. (ed.) (1990). Asymmetric Information, Corporate Finance, and Investment. University of Chicago Press.

Jarrell, G. A., Brickley, J. A., Netter, J. M. (1988). The Market for Corporate Control: The Empirical Evidence since 1980. In: Journal of Economic Perspectives, Winter, 49–68.

Kindleberger, Ch. (1973). The World in Depression, 1929–1939. Berkeley.

Kindleberger, Ch. (1984). A Financial History of Western Europe. London.

Kindleberger, Ch. (1989). Manias, Panics and Crashes. A History of Financial Crises. Basingstoke.

King, R., Levine, R. (1993a). Financial Intermediation and Economic Development. In: Mayer, C., Vives, X. (eds.). Capital Markets and Financial Intermediation, Cambridge.

King, R., Levine, R. (1993b). Finance and Growth: Schumpeter might be right. In: Quarterly Journal of Economics (CVIII).

King, R., Levine, R. (1993c). Finance, Entrepreneurship, and Growth. In: Journal of Monetary Economics, 32(12).

Leahy, M., Schich, S., Wehinger, G., Pelgrin, F., Thorgeirsson, Th. (2001). Contributions of Financial Systems to Growth in OECD Countries. In: Economics Department Working Papers No. 280, OECD.

Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. In: Journal of Economic Literature, 35 (2).

Levine, R. (2000). Bank-Based or Market-Based Financial Systems: Which is Better? University of Minnesota, January.

Mayer, C. (1988). New Issues in Corporate Finance. In: European Economic Review, (32).

Mayer, C. (1990). Financial Systems, Corporate Finance and Economic Development. In: Hubbard, R. G. (ed.). Asymmetric Information, Corporate Finance and Investment, Chicago.

Mayer, C. (1996). Corporate Governance, Competition and Performance. In: Economics Department, Working Papers, Paris, (164), OECD.

McKinnon, R. (1973). Money and Capital in Economic Development. Washington.

Minsky, H. (1975). John Maynard Keynes. Columbia University Press, New York.

Nunnenkamp, P. (1995). The German Model of Corporate Governance. In: Kiel Working Papers (713).

Obstfeld, M., Taylor, A. (1997). The Great Depression as a Watershed: International Capital Mobility over the Long Run. In: NBER Working Paper 5960.

Obstfeld, M., Taylor, A. (2002). Globalization and Capital Markets. In: NBER Working Paper 8846.

OECD (1995a). Corporate Governance Environments in OECD Countries. Paris.

OECD (1995b). Privatisation and Capital Markets in OECD Countries. In: Financial Market Trends (60).

OECD (1995c). Financial Markets and Corporate Governance. In: Financial Market Trends (62).

Pagano, M. (1993). Financial Markets and Growth: An Overview. In: European Economic Review 37(2/3).

Policy Forum (1995). Corporate Governance. In: Economic Journal, May.

Poole, W. (2002). Financial Stability. In: Federal Reserve Bank of St. Louis Review, September/October.

Finance for Growth, Finance and Growth,
Finance or Growth . . .?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

Prowse, S. (1994). Corporate Governance in an International Perspective: A Survey of Corporate Governance Mechanisms among Large Firms in the United States, the United Kingdom, Japan and Germany. In: BIS Economic Papers, 41.

Rabin, M. (2002). A Perspective on Psychology and Economics. In: European Economic Review, Nos. 4/5.

Schumpeter, J. (1934). Theorie der wirtschaftlichen Entwicklung. Berlin.

Shiller, R. (2000). Irrational Exuberance. Princeton.

Shiller, R. (2002). From Efficient Market Theory to Behavioral Finance. In: Cowles Foundation Discussion Paper No. 1385, October.

Shleifer, A., Vishny, R. (1986). Large Shareholders and Corporate Control. In: Journal of Political Economy, (94), 461–488.

Shleifer, A., Vishny, R. (1996). A Survey of Corporate Governance. In: NBER Working Paper, (5.554).

Shleifer, A. (2000). Inefficient Markets. An Introduction to Behavioral Finance. Oxford University Press, Oxford.

Smith, A. (1978). Der Wohlstand der Nationen. Munich.

Spiegel, H. (1983). The Growth of Economic Thought. Durham.

Stiglitz, J. (1985). Credit Markets and the Control of Capital. In: Journal of Money, Credit and Banking, (17).

Stiglitz, J. (2000). Capital Market Liberalization, Economic Growth, and Instability. World Development, No. 6.

Stiglitz, J., Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information. In: American Economic Review (71), June.

Strange, S. (1986). Casino Capitalism. Oxford, UK; New York, NY, USA: B. Blackwell.

Thiel, M. (2001). Finance and Economic Growth – A Review of Theory and the Available Evidence. In: European Commission, Economic Papers, No. 158, July.

Tirole, J. (2002). Rational Irrationality: Some Economics of Self-Management. In: European Economic Review, Nos. 4/5.

Tobin, J. (1984). On the Efficiency of the Financial System. In: Lloyds Bank Review, July.

Wachtel, P. (2001). Growth and Finance. New York University, June.

Wicksell, K. (1934). Lectures on Political Economy. London.

Wicksell, K. (1913, 1922). Vorlesungen über Nationalökonomie. Jena.

Zwiebel, J. (2002). Review of Shleifer's Inefficient Markets. In: Journal of Economic Literature, December.

Annex

Chart 1

Global Foreign Exchange Market Turnover

Daily averages in USD billion

■ Spot transactions
▨ Futures und swaps

Source: BIS.

Chart 2

Global OTC Derivatives Market Turnover

Daily averages in USD billion

■ Interest rate derivatives
▨ FX derivatives

Source: BIS.

Finance for Growth, Finance and Growth,
Finance or Growth . . . ?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

Chart 3

International Positions of the Banking System[1])

(BIS reporting banks)

USD billiion
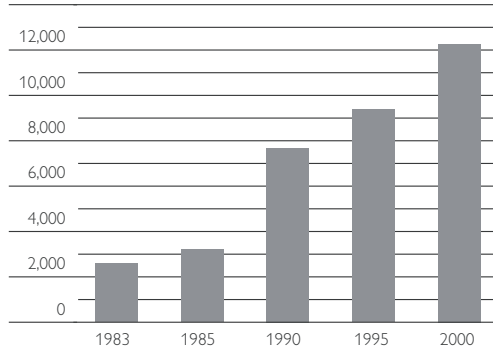
Source: BIS.
[1]) Including local assets in foreign currency.

Chart 4

Market Capitalization

and Stock Turnover on Five Major Western Exchanges[1])

USD billion
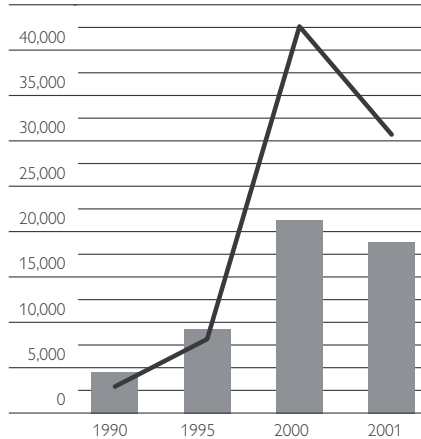
■ Market capitalization
— Turnover

Source: FIMV, own calculations.
[1]) NYSE, Nasdaq, Deutsche Börse, London, Paris.
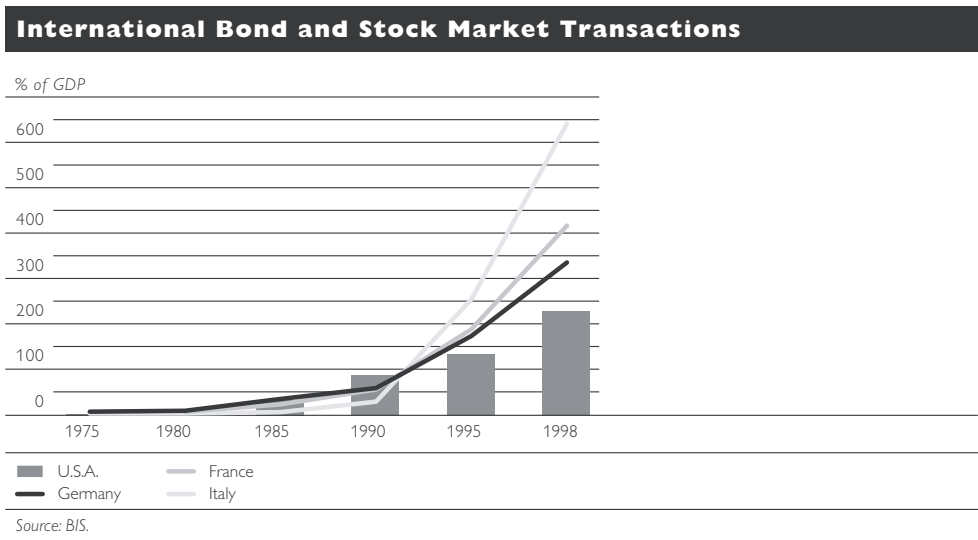
Finance for Growth, Finance and Growth,
Finance or Growth . . .?
Three Perspectives on the Interaction
of Financial Markets and the Real Economy

Chart 5

International Bond and Stock Market Transactions

% of GDP

| | U.S.A. | France |
| | Germany | Italy |

Source: BIS.

Chart 6

Long-Term Developments of Household's Financial Assets

billion of national currency

	U.S.A.
	Germany
	Austria

Source: Federal Reserve, Deutsche Bundesbank, OeNB.
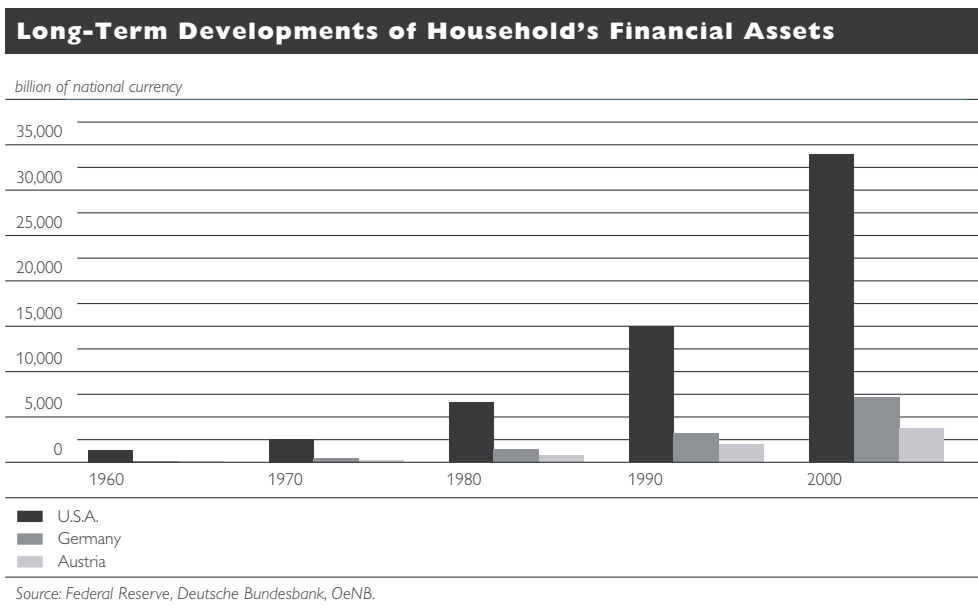
Stock Markets, Shareholder Value and Investment

Engelbert
Stockhammer[1])

1 Introduction

Financial liberalization has become an important policy issue in the past decades and has led to a more prominent role of financial markets, and the stock market in particular, within the economy. The paper discusses macroeconomic effects of the stock market with a focus on its impact on business investment. In doing so the paper confronts the popular belief that stock markets matter because they provide finance for investment. Such a belief is not only appealing intuitively, but also backed theoretically. Standard economic theory has shown that, assuming perfect information, the source of finance does not matter (the Modigliani-Miller theorem) and that higher share prices will lead to higher investment since they reduce the cost of capital (the Q theory of investment).

Contrary to these theoretical expectations, empirical research on investment expenditure indicates a minor role, if any, for stock markets to directly influence investment through providing finance. However, the conclusion from this is not necessarily that stock markets do not matter, rather they may affect investment through other channels. Thus next to the direct finance effect the paper discusses the following indirect effects: effects on the allocation of investment; effects on the financial system through balance sheet effects; wealth effects in consumption; effects on corporate governance ('shareholder value revolution'). While the first three of these indirect effects are discussed by means of an admittedly selective literature survey, the issue of corporate governance is treated in more depth and a novel post-Keynesian model of the shareholder value oriented firm is proposed.

The paper discusses the indirect effect of stock markets on investment via the establishment of 'shareholder value' as a management objective. The argument presented presumes potentially conflicting interests between management and shareholders and discusses the effects of a change in the power of shareholders by means of a Post-Keynesian model of the firm. An increase in the power of shareholders can lead to an increase in desired profitability and a decrease in desired growth and investment at the firm level.

The paper is organized as follows. Section 2 discusses the role stock markets play in financing investment. Section 3 summarizes studies on investment behavior and role of share prices therein. Section 4 addresses the question of how stock markets affect the allocation of investment. Section 5 discusses the role of share prices in the making of financial crises. Section 6 summarizes studies on the effects of wealth on consumption. Corporate governance issues are introduced in section 7, and a post-Keynesian interpretation of the shareholder revolution is presented in section 8. Finally, section 9 summarizes the key findings.

2 Stock Markets and the Finance of Investment

The standard expectation about the role of financial markets is that financial markets channel funds from households that save to firms, which invest. In a modern economy this role is played by financial intermediaries such as banks and by financial markets, of which the stock market is the most prominent, though by no means the only one. Therefore a naive expectation is that the development of stock markets over the past 20 years has led to an investment boom and that rising stock prices have translated into cheaper finance and thus higher investment. It turns out that on the aggregate level, neither of the two expectations is correct. Below, two bodies of literature will be summarized that reach a similar conclusion using very different means: stock markets and share prices matter little for investment.

In 1988 Colin Mayer published a paper in the European Economic Review, where he used a flow-of-funds analysis to look at the sources of finance for investment in major industrialized economies. The flow-of-funds data allow to analyze the source of finance of business fixed capital investment for the non-financial business sector as a whole. Mayer looked at the period 1970 to 1985 and found that the main source of finance was retained earnings in all countries, with a share of 62% to 107% of total investment. Loans (and similar bank originated funds) amounted to 5% to 42%, whereas equity contributed –4% to 5% of investment expenditures. The negative contribution of equity is possible because these figures are net contributions. The contribution will turn negative if the acquisition of shares requires more funds than those received through issuing new shares.

These findings were a surprise when first published and still pose a puzzle to economists today. Mayer's findings have since been replicated and updated with substantially the same findings (e.g. Corbett and Jenkinson, 1997). The most recent thorough analysis is offered by Schaberg (1999), whose results are reproduced below and will be used to discuss the results.

Table 1

Net Sources of Finance 1970 to 1994

	U.S.A.	United Kingdom	Germany	France	Japan
	%				
Internal finance	92.4	90.0	73.9	72.1	65.3
Bank finance	11.2	13.7	13.2	16.0	28.5
Bonds	15.4	5.2	5.2	4.8	8.1
Equity	− 6.4	− 4.1	− 4.1	4.5	3.5
Trade credit	− 5.0	− 0.5	− 0.5	− 0.6	− 4.8

Source: Schaberg 1999, Table 2.2. Rows "Capital transfer", "Other" and "Discrepancy" have been omitted for simplicity. Therefore rows will not add up to 100.

Table 1 summarizes the net contribution of various sources to the non-financial business sector for the U.S.A., the UK, France, Germany and Japan from 1970 to 1994. Internal finance, i.e. retained earnings, are clearly the most important source of investment in all countries. In the U.S.A. and the UK 90% or more were financed internally; in the other countries, the value is around 70%. Bank finance is the second important source, with contributions ranging from 11% to 16% for the U.S.A., the UK, France and Germany and coming to 28% for Japan. Bonds are an important source of finance in the U.S.A. (15.2%),

where its contribution exceeds that of banks, but account for around 5% in the UK, France and Germany. Equity had a negative contribution in the U.S.A., the UK and France, but a positive one in Germany and Japan.

The U.S.A. and the UK are considered cases of a market-based financial system;[1]) thus it is interesting to note that these countries have the highest ratios of internal finance. While bond finance is particularly important in the U.S.A., it contributes only moderately in other countries. Already Mayer noted the "paradox that the most competitive financial markets in the world appear to be the most deficient at funding their industries" (Mayer 1988, p. 1182). Overall it seems that the market-based financial systems effectively require a higher degree of self-financing of investment.

Table 2 summarizes the development of the net contribution of equity over time. Patterns differ significantly across countries, and it is probably most interesting to look at the U.S.A., since the U.S.A. is often used as the role model for the design of the financial system. There the contribution of equity was positive and significant in the early 1970s, fell in late 1970s and turned negative in the early 1980s. In the second half of the 1980s, the time of the merger and acquisition boom, the negative contribution reached an astonishing −26%. In the early 1990s the contribution became moderately negative again. The UK also had the highest negative contribution in the second half of the 1980s, but negative contributions throughout the 1970s and 1980s. Only in the 1990s did the contribution turn positive. Both Germany and France experienced negative contributions in the 1990s, but positive ones before. In Germany the contributions are small in any case, but in France they were above 5% throughout the 1970s and 1980s. Only Japan had positive, if moderate, net contributions of equity over the entire period.

Table 2

Equity as Percentage of Net Finance

	1970 to 1974	1975 to 1979	1980 to 1984	1985 to 1989	1990 to 1994
U.S.A.	7.4	1.5	−4.7	−26.0	−4.5
United Kingdom	−7.2	−2.3	−5.2	−12.2	9.6
Germany	0.7	0.5	−0.4	2.4	−3.4
France	6.9	8.9	5.4	5.8	−2.2
Japan	3.4	3.9	4.2	3.7	2.9

Source: Schaberg, 1999.

What do we conclude from this analysis of flows of funds data? Mayer (1988) suggested that the market-based systems had an inferior performance in financing and supporting investment. Thus the inferior financial system translates into inferior investment expenditures. Mankiw (1988) on the other hand suggested that causality runs the other way and it was the low investment expenditures in the Anglo-Saxon countries that caused the high retention rates, since firms could easily self-finance their investment. In his explanation the financial sector is a side show that would eventually adapt to the needs of

1   The distinction between market-based and bank-based financial systems goes back to Gerschenkron (1962), who compared the industrialization of various countries. Grabel (1997) offers an up-to-date discussion. Schaberg (1999) refers to exit-based versus voice-based financial systems.

industry. In the meantime a substantial literature has emerged that emphasizes the importance of the development of the financial sector for economic growth (see Levine, 1997, for a survey). Schaberg (1999) sides with Mayer in finding that market-based financial systems exhibit lower and more volatile growth than bank-based systems. Recent research, however, failed to find support for this conclusion (see section 4).

For the purpose of the present paper, however, the crucial finding is that stock markets contribute little to the financing of investment. Moreover, in market-based financial systems the net contribution of stock markets is even negative. Thus stock market development by itself is unlikely to have positive effects on investment expenditures.

3 Investment Behavior and Share Prices

A very different strand of literature, empirical research on business investment, reaches a similar conclusion. If issuance of shares were used to finance investment, an increase in share prices should lead to an increase in investment expenditure because the cost of capital decreases. Indeed, this argument has a long tradition in economics; it can be found e.g. in Keynes, and was formally presented in Tobin's Q theory of investment (Tobin, 1969).

Tobin regarded investment as a portfolio decision related to financial markets. If the demand price of a firm is the market value (roughly speaking, the value of its shares) and its supply price the cost of additional capital goods, then investment should be a function of the ratio of the two, which is called Tobin's Q. Expectations about future sales and profits should be captured in share prices. In this theory no other variables are needed to explain investment because all expectations e.g. concluding future sales ought to be captured in share prices.

Tobin's financial theory is appealing because it elegantly combines real and financial aspects and has sparked much empirical research. Using only share prices to explain investment as suggested by the theory would of course be dubious in empirical research because other variables will be correlated with share prices. Therefore it would be impossible to isolate the effect of these variables. Indeed share prices are well known to be a leading business cycle indicator and other investment theories also predict that investment will respond positively to growth. Thus it has become practice to add share prices to the standard explanatory variables such as demand growth, the cost of capital, retained earnings and the like.

Empirical studies have almost unanimously failed to find support for the effect of share prices on investment expenditures in multivariate regressions. For example, Tease concludes: "When other determinants of investment are controlled for, share prices do not seem to explain much of the variation in investment in any of the G7 countries" (Tease, 1993, p. 58). Blanchard, Rhee and Summers (1993) and Morck, Shleifer and Vishney (1990) also examine the effect of share prices on investment and report similar results.

While (nonresidential) investment expenditures overall remain hard to explain, the relative importance of the key factors is confirmed by various studies. Chirinko in his authoritative survey concludes "output (or sales) is clearly the dominant determinant of investment spending with user cost having

a modest effect" (Chirinko, 1993, p. 1881). And "the usefulness of q theory is called into question by its generally disappointing empirical performance" (Chirinko, 1993, p. 1889). Ford and Poret (1991) arrive at the same results.

Thus the empirical picture is rather clear, if surprising. Equity is not used as a major source to finance investment and share prices have no economically relevant effect on investment expenditure. The conclusion is that if the stock market has an effect on investment, this effect does not operate through the standard channel of providing finance. Some qualifications of course are necessary. First the research quoted refers mostly to aggregate data. The flow of funds analysis is on aggregates, and much of the investment literature quoted is also on aggregate investment expenditures, though e.g. Blanchard, Rhee and Summers (1993) also refer to firm level evidence. None of the evidence cited is inconsistent with the notion that the stock market may be a source of finance for some firms. In particular there may be small sectors, such as those related to venture capital, where the stock market matters.

Second, the empirical studies cited refer to the postwar era, thus to a particular historical period. Stock markets may have played a different role in the past. Rajan and Zingales (2001), for example, suggest dramatic changes in the size and probably also function of the financial system in the past century. Stock markets may thus also play a different role in the future. But as discussed above, the experience of the countries which have the most developed and liberal financial systems, i.e. the U.S.A. and the UK, does not suggest that current developments of financial liberalization move the function of stock markets towards the financing of investment.

The fact that stock markets contribute so little to firms' finance has spurred the development of theories that are able to explain this phenomenon. Among these, the pecking order theory of investment, the tradeoff theory and Kalecki's principle of increasing risk are the most established ones. The *pecking order theory,* originally developed by Myers and Majluf (1984; see also Myers, 2001) assumes that information asymmetries are stronger between management and investors on financial markets than between management and banks. Since debt is a claim prior to equity, which is a residual claim, banks are less exposed to errors in valuing a firm than financial markets. From that a pecking order of finance can be derived. Firms will use internal finance first, debt finance last and equity only when the debt finance becomes too costly.

The *tradeoff theory* argues that due to the different tax treatment of debt[1]) and equity firms have a strong incentive to acquire the former. A high debt ratio, however, increases the risk of bankruptcy in case of shocks. Thus the firm will increase the debt ratio to the point where the marginal effect of the tax shield equals the (expected) marginal cost of financial distress (Myers, 2001). Similarly in spirit, but without assuming maximizing behavior, Michal Kalecki (1943) argued at an early point in time first, that firms' access to the capital market will depend on their size and profitability and, second, that an increasing debt ratio will put firms' survival at risk in case of difficulties. They called the latter the *principle of increasing risk,* i.e. the risk of bankruptcy increasing with the

---

1   *Interest payments on debt are tax deductible, whereas dividend payments are not.*

debt ratio. What these theories share is the assumption that capital markets are imperfect, thus rejecting the very basis of the Modigliani-Miller theorem.

4 Allocation of Investment

If stock markets have little effect on aggregate investment, they may still be important in allocating investment. There are three major channels through which stock markets may affect the allocation of investment even in the absence of a strong direct effect. First, firms may use price signals of stock markets as a guide in their investment plans. Second, banks may be influenced in their credit decisions by the stock market performance of firms or sectors. Third, even if the contribution of stock market is small, this small amount may fund selective industries that banks neglect. In popular discourse this latter channel has entered under the heading of venture capital. It has often been argued that market-based financial systems are superior to bank-based systems because they are better in supporting innovation. The question is whether such indirect effects of stock markets, if they exist at all, are strong enough to have effects on aggregate growth.

While substantial amounts of research have been performed, these questions are far from being settled. This is at least in part due to substantial measurement problems of the crucial variables involved. Rather than giving an overview of the literature, three examples arriving at different conclusions will be given. Carlin and Mayer (1999) investigate the effects of financial systems (and other variables) on growth, investment and research activities of industrial sectors in OECD countries. They find that stock markets do foster R&D expenditures in rich countries. Arestis, Demetriades and Luintel (2001) use time series analysis for some OECD countries to investigate the relation between stock market development and growth and find that stock markets have little positive effects on growth, whereas banks matter. Beck, Demirgüc-Kunt, Levine, and Maksimovic (2001), citing evidence from firm, industry and country level for developing as well as developed countries, conclude that "distinguishing countries by financial structure does not help in explaining cross-country differences in long-run GDP growth, industrial performance, new firm formation, firm use of external funds, or firm growth" (Beck, Demirgüc-Kunt, Levine, and Maksimovic 2001, p. 193). Thus, while there is weak evidence for allocative effects of stock markets, it is probably fair to say there is no evidence for these effects to be strong enough to affect aggregate growth.

5 Balance Sheet Effects and Banking Crises

One important effect of a change in the valuation of shares is on balance sheets. This is true for households as well as firms and financial institutions, but it is most important for financial institutions since by definition their most important assets are financial assets. Since credit is the crucial form of outside finance available to many firms in an incomplete market setting, a banking crisis and the accompanying credit crunch may have devastating effects on the economy (and investment). This has been argued e.g. by Bernanke (1983) for the Great Depression of the 1930s for the U.S.A.

Empirical research on the role of stock markets in the making of banking crises is rare. In particular it has been difficult to identify the relative contri-

bution of share prices, since banking crises usually happen when a host of factors like a recession, a collapse of the exchange rate or capital flight coincide. Many studies (e.g. Demirgüc-Kunt and Detragiache, 1998) do not even include share price. One of the studies that does include them finds that "a fall in stock prices is also associated with an increased likelihood of banking sector distress" (Hutchison and McDill, 1999, p. 17). This is hardly surprising, but the exact effect of share prices on the stability of the banking sector remains elusive.

6 Wealth Effects in Consumption

Until very recently the effect of stock markets on consumption has been considered an issue of minor significance. While there was a major debate between Keynesians and Monetarists on whether consumption expenditures depend on current or permanent income, and if the latter, how to measure it; and on the related issue of whether interest rates affect consumption, both sides would probably have agreed that wealth effects were not more than of secondary relevance. With the stock market boom of the 1990s and even more with the bursting of the bubble in the late 1990s, research on the wealth effect has surged.

No consensus about the order of magnitude or even the existence of the effect of stock market wealth has yet emerged, even though The Economist quotes such a consensus estimate of around 5% for the U.S.A. and somewhat lower for other countries. This is backed by various working papers of OECD economics department (e.g. Boone, Giorno and Richardson, 1998; Boone, Girouard, and Wanner, 2001). Others are more skeptical about the reliability of such an effect. Poterba in his survey cites the stock market crashes of 1929 and 1987 as evidence that consumption responds little to changes in equity prices and also is cautious in the interpretation of household level data.

One of the biggest problems in the estimation of wealth effects is the disentangling of the effects of various components of wealth. Case, Shiller and Quigley (2001) separate housing wealth from financial wealth and analyze their respective effects on consumption for 14 countries as well as within the U.S.A. They find strong evidence for an effect of housing wealth, but only a weak one for stock market wealth. This is interesting not only with respect to the current situation of the U.S.A., which experienced a collapse in stock prices and where there is fear of a growing bubble in property prices. Housing wealth is also held much more widely. One reason for the importance of housing wealth may be that housing wealth loosens credit constraints more effectively than financial wealth since it is usually readily accepted as collateral.

To summarize, studies have yielded different results about the robustness of an effect of stock market wealth on consumption. In any case, there is more evidence for an effect of share prices on consumption than on investment. If the former exists, then there also would be an indirect effect on the latter. A rise in stock prices would increase consumption and via the accelerator would also augment investment. It is remarkable that such an indirect effect seems more consistent with the evidence than the direct one.

7 Corporate Governance, Shareholder Value
and Investment

Stock markets may also affect investment behavior by affecting corporate governance and thus management priorities. In particular since the 1970s important changes have occurred in corporate governance that are closely linked to financial deregulation and that have become known as the shareholder revolution. It is worth quoting from an OECD study at length:

"One of the most significant structural changes in the economies of OECD countries in the 1980s and 1990s has been the emergence of increasingly efficient markets in corporate control and an attendant rise in shareholders' capability to influence management of publicly held companies. In particular, owing to the expanded possibilities for investors to use the capital market to measure and compare corporate performance of corporations and to discipline corporate management, the commitment of management to producing shareholder value has become perceptibly stronger; this represents a significant change in the behaviour of large corporations" (OECD, 1998, p. 15).

The effects of this development are viewed differently by different authors – unsurprisingly, since it represents a shift in the power structure within the firm. Baker and Smith emphatically welcome that after the deregulation and changes of the 1970s and 1980s "the pendulum could swing back toward financial capitalism, which would limit managerial discretion in favor of more rigorous exploitation of corporate resources" (Baker and Smith, 1998, p. 22).[1]) Lazonick and O'Sullivan on the other hand write: "In the name of creating 'shareholder value', the past two decades have witnessed a marked shift in the strategic orientation of top corporate managers in the allocation of corporate resources and returns away from 'retain and reinvest' and towards 'downsize and distribute'" (Lazonick and O'Sullivan, 2000, p. 18).

The seminal theoretical paper that provided a rationale for empowering shareholders is Jensen and Meckling (1976). They derive the objective function of the firm from a principle-agent problem between owners and management. In doing so they were pioneers of using these models for a positive modeling of the firm. Managers will not maximize profits and thus the value of the firm, but will pursue their own interest. Thus independent managers with only partial claims on the firm lead to waste. To avoid this waste and consequently increase profits and the value of the firm, Jensen and Meckling propose that managers be paid in stocks or stock options, which has become frequent practice since the 1980s.

In the course of the 1970s two institutional changes occurred that helped to align management's interests with shareholders' interests: the development of new financial instruments that allowed hostile takeovers and changes in the pay structure of managers. Among the former were tender offers and junk bonds (Baker and Smith, 1998); among the latter were performance-related pay schemes and stock options (Lazonick and O'Sullivan, 2000). The former play the role of the stick, the latter is the carrot. Both have proven fairly effective in making management adopting shareholders' priorities and "profoundly altered patterns of managerial power and behavior" (Baker and Smith, 1998, p. 3).

---

1   *Marxists would probably agree but be more specific in saying "… rigorous exploitation of workers."*

Engaging in purely wasteful activities, as emphasized by Jensen and Meckling, need not be the only consequence. Another stream of thought argues that independent managers will overinvest. Managers' motivation may be, at least in part, a drive for power, i.e. being in command of people and resources. This is achieved by large and growing firms. Business historians, in particular Chandler (1977), and post-Keynesians[1]) have argued that what independent management will lead to is increased growth rather than waste. Macroeconomically, it may thus be a good thing if the economy is in a situation of underemployment, which according to post-Keynesians is the normal situation for capitalist economies.

8 A Post-Keynesian Model of the Shareholder Revolution[2])

In the following, a simple model inspired by the post-Keynesian theory of the firm is proposed to analyze such a shift in the power relations. The starting point for the post-Keynesian theory of the firm is, interestingly, similar to modern theories of the firm: the separation of ownership and control.

Managers will have interests other than the maximization of profits: they may aspire to power and prestige that might be expressed in high market share and fast growth, luxurious offices and many subordinates. Owners, on the other hand, are interested merely in profits. This strictly speaking also need not be true; they may also pursue other interests. In particular they will be interested in asset prices, i.e. in the value of the firm on the market. We simplify things by assuming that there is a direct relation between profits and asset prices. This, of course, will not hold strictly in reality, but standard theory suggests that the price of an asset is given by its discounted (expected) revenue stream, which in the case of industrial firms is reasonably well proxied by the firms' profit. The issue of speculation is thereby sidestepped. Needless to say, this is not done for the sake of realism, but for the simplicity of exposition. The specific goal of the firm, or more precisely the relative weight of conflicting goals, will depend on the relative power of managers and owners. These in turn will depend on the specific institutional setting of the firm and the economy.

To formalize the argument, assume that the only two variables, growth and profits, enter management's and the owners' utility functions. Further assume that management only cares about growth and owners only care about profits. Thus we get the following utility functions U_M and U_O, for managers and owners respectively.

$$U_M = U(g)$$
$$U_O = U(r) \tag{1}$$

where g is the investment or growth of the firm and r the profit rate.

---

1   Developed by Galbraith (1967) and Eichner (1976), and summarized neatly by Lavoie (1992), post-Keynesians have a well elaborated theory of the firm in the age of managerial capitalism.
2   This and the following section is based in part on Stockhammer (2004).

The firm's objective function will be a weighted combination of the two

$$U_F = U_M^{1-\beta} U_O{}^{\beta} \tag{2}$$

where $0 \leq \beta \leq 1$ is the relative power of shareholders.

The difference in interests would be no issue if the two goals were complementary. But this will in general not be the case. With a standard cost function profitability is concave in investment. Thus, there will be profit maximizing level of investment above which a tradeoff exists. Since managers aim at high growth, the firm will only operate in this region where there is a tradeoff.[1]

Accepting the tradeoff, we get profits as a function of investment:

$$\text{profit} - \text{growth tradeoff: } r^{RG} = r(g) \text{ with } r' < 0 \tag{3}$$

Thus the firm will maximize its objective function subject to the growth-profit tradeoff.

It is instructive to take a look at two extreme cases. First, assume that managers have all the power; the firm's objective function then contains only growth. Managers will then be maximizing growth. Usually managers will subject either to a survival condition, i.e. that the firm does not accrue losses, or to a finance constraint. Inside finance and outside finance are different.[2] For simplicity assume that banks give loans as a multiple of the profit earned last year. From this it follows that we can write the amount of investment feasible for a firm as a function of profits.

$$\text{finance constraint: } g^{FC} \leq g(r) \text{ with } g' > 0 \tag{4}$$

Finance is limited by profits minus dividends paid, i.e. retained earnings, and outside finance, which is a positive function of profits. Note that this constraint need not be binding. It tells how much the firm can possibly invest, not necessarily how much it will invest.

Chart 1 gives a graphical analysis of the managerial firm. The horizontal line U_M is the indifference curve of managers, who only aim at growth; the vertical line U_O is the indifference curve of owner. r^{RG}, the concave line, is the growth-profit tradeoff and g^{FC} is the finance constraint. Managers want to achieve the highest growth rate possible, which in this case is given to be the finance constraint. Therefore, in the managerial firm, the chosen g,r combination is g^{MF} and r^{MF}.

Second, consider the situation where owners have all the power. Then the firm is simply profit maximizing and will choose the profit-maximizing growth level. An intermediate case of a shareholder-dominated firm (SDF) is depicted

---

1 *The notion that growth has occurred at the expense of profits is a rather standard one in recent literature on corporate governance. E.g. an OECD publication reads: "Among the manifestations of this lack of control over management were the pursuit of market share and growth at the expense of profitability (…)" (OECD, 1998, p. 17; emphasis added). To be fair, this is not the only manifestation given, but the existence of such a tradeoff is obviously implied.*

2 *This is one of the basic assertions of post-Keynesian economics that has been slowly and painfully rediscovered by neoclassical economists over the past decades after Miller and Modigliani (1958). Following the principle of increasing risk, firms are reluctant to accept high leverage rates since a failure will put the existence of the firm at risk. Banks on the other hand will take current profit and wealth as a proxy for a firm's reliability, and give credit only to firms that are already profitable.*

Chart 1

Preferences and Constraints in a Managerial Firm (MF)
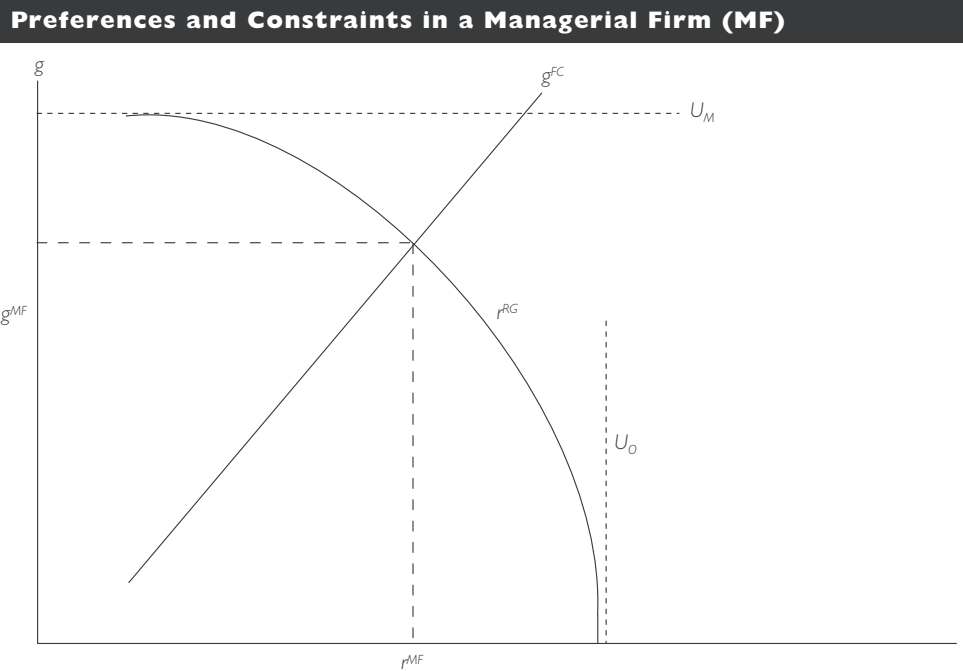
in chart 2. The notation is the same as above. Now through stock options and the threat of hostile takeovers, managers have adapted partially to the interests of shareholders, which is symbolized by the indifference curve U'. It is an intermediate case between indifference curves of managers and owners. In this case the chosen g,r combination will be g^{SDF} and r^{SDF}, with lower growth and higher profitability than in the previous case.

Chart 2

Preferences and Constraints

in the Shareholder-Dominated Firm (SDF)
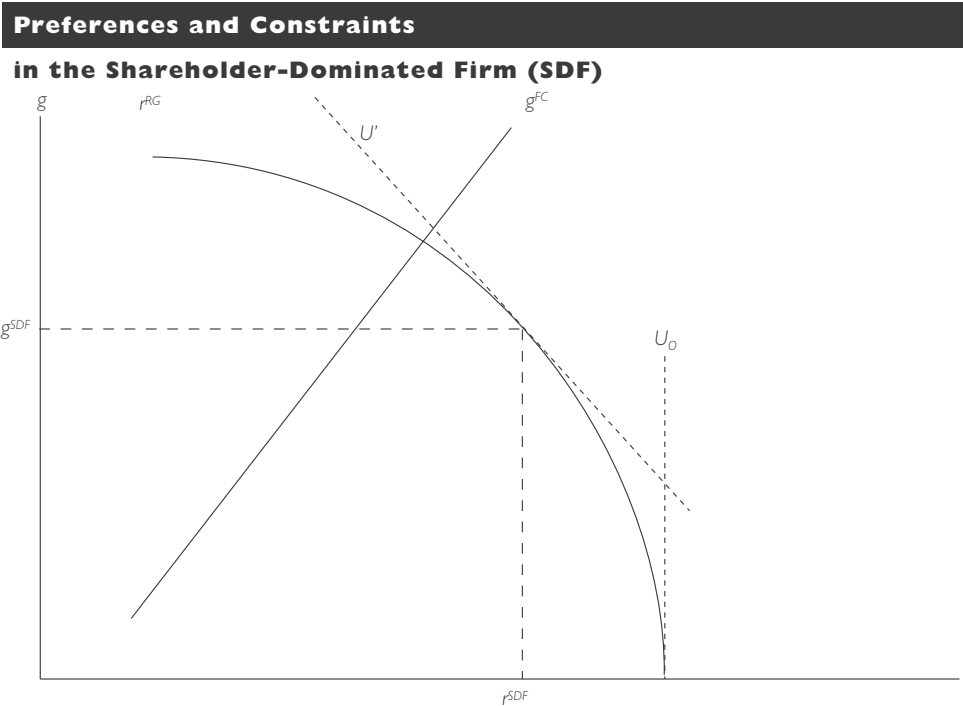
It is difficult to test this theory, since there is no straightforward measure for shareholder power. Stockhammer (2004) proposes the 'rentiers' share of non-financial businesses' (henceforth: RSNF), i.e. the interest and dividend income of nonfinancial businesses as a portion of their value added,[1] as a proxy. The rationale for this is the following. If our story were true, one would expect that managers and consequently nonfinancial businesses identify increasingly as rentiers and hence will also behave as such.[2] One would expect lower desired growth and more financial investment. In other words, the aim of the firm shifts from production-oriented goals that are typical for industrial managers towards the return orientation that is typical for investment funds. RSNF is thus a proxy for the "investment fund-ness" of nonfinancial businesses.

This measure obviously has shortcomings. First, it is an indirect measure, a proxy, because we cannot measure the changes in management priorities directly. Instead we look at a measure that, in our hypothesis, is itself a result of the change in attitudes. Second, RSNF measures income from financial investment rather than financial investment itself. The former may rise because interest rates or dividend payout ratios have risen or because more financial investment has been undertaken. Thus we cannot distinguish between additional income due to changes in management priorities or due to changes in rates of return. In the econometric analysis this problem is addressed by including interest rates in the regression, thus controlling for one important measure of financial rates of return. However, the measure also has an attractive advantage because it is an income measure. If firms were subject to a finance constraint, one would expect income of any kind to be positively related; however, the theory proposed expects a negative effect.

To isolate the effect of financialization on investment we control for standard variables that affect investment decisions. Thus we include an accelerator term, a profit term and a term for the relative cost of capital as the standard variables in the literature (see Meyer and Kuh, 1957; Jorgenson, 1971; and Chirinko, 1993, as surveys). The investment equation thus is:

$$ACCU = f(GROWTH, PS, CC; RSNF) \tag{5}$$

with the expected signs being: $f_{GROWTH} > 0, f_{PS} > 0, f_{CC} < 0, f_{RSNF} < 0$ where ACCU, GROWTH, PS, RCC, and RSNF denote accumulation, GDP growth, profit share, relative cost of capital, and rentiers' share of nonfinancial businesses respectively.[3] Data definitions and sources are summarized in the Appendix.

1   *The numerator of this expression captures the rentiers' income. Note that the "rentiers' share of the non-financial business sectors" measures the receipts from financial investment rather than financial investment itself. It is derived from the National Accounts and thus a flow magnitude that does not include revaluation of assets.*

2   *Note that our story avoids assigning the active role exclusively to rentiers and financial markets. Given the ambiguous class positions of management they may, after initial changes actively promote and further the shareholder value orientation, as noticed by Lazonick and O'Sullivan (2000) and Jürgens, Naumann, and Rupp (2000).*

3   *This specification is inspired by the reformulation of post-Keynesian investment function by Marglin and Bhaduri (1990), but contains the neoclassical approach (pioneered by Jorgenson, 1963) as a special case. Keynesians argue for the importance demand effects and the role of profits – as source of internal finance and as proxy for profit expectations – whereas neoclassical economists emphasize the role of the relative cost of capital and accept the role of output.*

Table 3 reports the results of this regression. Since the regression is in levels and autoregressive terms are included, the R^2 are very high with the lowest value (for the U.S.A.) 0.84. GROWTH is statistically significant at the 5% level only once, in the UK. PS ist statistically significant at the 5% level twice (Germany and France), and CC is statistically significant only in the UK (with Germany close to the 10% level). RSNF is statistically significant at the 5% level or better in France and the U.S.A. Thus the coefficient estimates exhibit only moderate levels of statistical significance, which in part is due to multi-collinearity and the inclusion of two lags of the dependent variable. This was done after indication of second order autocorrelation. The Breusch-Godfrey test does not indicate the presence of autocorrelation (the test was performed up to four lags). There is no indication of a structural break.

Table 3

Regression Specification with Output Growth

	Germany 1963 to 1990	France 1978 to 1997	United Kingdom 1970 to 1996	U.S.A. 1963 to 1997
const	−0.03*	−0.02	0.00	0.01
	−1.85	−1.67	−0.03	0.40
GROWTH$_{-1}$	−0.01	0.02	0.08**	0.08
	−0.11	0.31	2.52	1.24
PS$_{-1}$	0.0012**	0.0011**	7E−05	0.000
	2.42	2.38	0.10	0.24
RSNF$_{-1}$	−0.22	−0.32***	−0.04	−0.22***
	−0.83	−2.66	−0.34	−2.45
ΔCC$_{-1}$	−0.0004	0.0004	−0.0003**	−0.001
	−1.12	0.61	−1.71	−1.47
ACCU$_{-1}$	1.13***	0.49	1.18***	0.75
	4.26	1.13	6.63	3.09
ACCU$_{-2}$	−0.36	0.18	−0.28	−0.22
	−1.60	0.52	−1.45	−0.99
R2	0.96	0.93	0.89	0.84
adj R2	0.94	0.90	0.85	0.80
BG Obs. R2	2.16	4.11	1.1	4.45
Chow Breakpoint Test 1980				
F-Stat	1.01		1.43	1.25
Prob.	0.46		0.28	0.32

Calculations performed with Eviews. Italic numbers are t-values.

*, ** and *** denote significance at 10%, 5% and 1% respectively. BG is the Breusch-Godfrey autocorrelation test. Its null hypothesis is no autocorrelation.

The results differ substantially across countries. This is not surprising since the degree to which shareholder value orientation has been implemented differs widely, with the U.S.A. and the UK leading the way, France following and Germany lying behind. To ensure the robustness of results, several different specifications have been estimated that yielded substantially similar results. These variations included a different measure for growth and different time series specifications.

The above discussion has been concerned with statistical significance. Whether the coefficient estimates, be they statistically significant or not, exhibit a value that is economically relevant, what McCloskey and Ziliak (1996) call its 'economic significance', is a different question. Some simple calculations confirm this. The mean estimate for the coefficient is –0.22 for all four countries. The mean change in RSNF from the 1960s to the 1990s is roughly 0.025. This gives a long term effect of the change in RSNF on accumulation of –0.015,

which is a substantial amount of the actual slowdown of accumulation over this period. However, the results vary greatly between countries. Needless to say, this back of the envelope calculation is not meant as a statement about actual effects, but merely as a check whether the effects that are implied by the parameter estimates are of an order of magnitude that is economically relevant. The answer to this question is unambiguously yes.

9 Conclusion

The paper has asked a seemingly simple question: how do stock markets affect investment? The straightforward answer would be that stock markets provide a source of finance for investment and thus that higher share prices lead to higher investment. Empirical evidence is rather clear that neither is the case. The analysis of the flows of funds to nonfinancial business show that equity does not provide net finance and research on investment behavior is almost unanimous in that share prices have no effect on investment expenditures.

Other than the obvious direct effect, changes in share prices may also affect investment indirectly. They may affect the allocation of investment, they may affect the stability of the financial system and they may through a wealth effect impact on consumption expenditures, which in turn will affect investment expenditures via the accelerator. Ironically, empirical research gives more support to the wealth effect and accelerator channel than to a direct finance channel.

Of these indirect channels changes in corporate governance have received the most attention. It has been argued that the shift in power from managers to shareholders that has become known as the shareholder revolution may have had strong effects on management priorities. Based on the post-Keynesian theory of the firm, it has been shown that under these conditions, the desired profit rate may have gone up, with the associated growth rates going down. Econometric evidence was presented to support such a view.

Thus the overall picture drawn here suggests that the stock market development of the past decades may have had little, if any positive effect, on investment expenditures. While the direct effects are nil, the indirect effects may be positive through the consumption boom, but this latter is not sustainable. A policy of empowering stakeholders rather than shareholders, which would constitute a break with the policies of the past two decades, is unlikely to have a negative effect on investment.

References

Arestis, P., Demetriades, P., Luintel, K. (2001). Financial Development and Economic Growth: The Role of Stock Markets. In: Journal of Money, Credit and Banking 33, 1, 16–41.

Baker, G., Smith, G. (1998). The New Financial Capitalists: Kohlberg Kravis Roberts and the Creation of Corporate Value. In: Cambridge University Press, New York.

Beck, T., Demirgüc-Kunt, A., Levine, R., Maksimovic, V. (2001). Financial Structure and Economic Development: Firm, Industry and Country Evidence. In: Demirgüc-Kunt, A., Levine, R. (eds.). Financial Structure and Economic Growth. MIT Press, Cambridge.

Bernanke, B. (1983). Nonmonetary Effects of the Financial Crises in the Propagation of the Great Depression. AER 73, 257–276.

Blanchard, O., Rhee, C., Summers, L. (1993). The Stock Market, Profit, and Investment. QJE 108, 115–136.

Boone, L., Giorno, C., Richardson, P. (1998). Stock Market Fluctuations and Consumption Behaviour: Some Recent Evidence. In: OECD Economics Department Working Papers No. 208.

Boone, L., Girouard, N., Wanner I. (2001). Financial Market Liberalization, Wealth and Consumption. In: OECD Economics Department Working Papers 308.

Carlin, W., Mayer, C. (1999). Finance, Investment and Growth. In: CEPR Discussion Paper No. 2233.

Case, K., Shiller, R., Quigley, J. (2001). Comparing Wealth Effects: The Stock Market Versus the Housing Market. In: NBER Working Paper No. w8606.

Chandler, A. (1977). The Visible Hand: The Managerial Revolution in American Business. MA, Harvard University Press, Cambridge.

Chirinko, R. (1993). Business Fixed Investment Spending: Modeling Strategies, Empirical Results and Policy Implications. Journal of Economic Literature XXXI, 1875–1911.

Corbett, J., Jenkinson, T. (1997). How is Investment Financed? A Study of Germany, Japan and the United Kingdom and the United States. The Manchester School Supplement 1997, 69–93.

Demirgüc-Kunt, A., Detragiache, E. (1998). The Determinants of Banking Crises in Developing and Developed Countries. In: IMF Staff Papers 45, 1, 81–109.

Eichner, A. (1976). Megacorp and Oligopoly: Micro Foundations of Macro Dynamics. Cambridge, Cambridge University Press.

Ford, R., Poret, P. (1991). Business Investment: Recent Performance and Some Implications for Policy. In: OECD Economic Studies 16, 79–131.

Galbraith, J. (1967). The New Industrial State. New York, New American Library.

Gerschenkron, A. (1962). Economic Backwardness in a Historical Perspective. Cambridge, Massachusetts, Harvard University Press.

Grabel, I. (1997). Savings, Investment, and Functional Efficiency: A Comparative Examination of National Financial Complexes. In: Pollin, R. (ed.). The Macroeconomics of Savings, Finance and Investment. Ann Arbor, University of Michigan Press.

Hutchinson, M., McDill, K. (1999). Are All Banking Crises Alike? The Japanese Experience in International Comparison. In: NBER Working Paper No. w7253.

Jensen, M., Meckling, W. (1976). Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure. In: Journal of Financial Economics 3, 305–360.

Jorgenson, D. (1971). Econometric Studies of Investment Behavior: A Survey. In: Journal of Economic Literature 9, 4, 1111–1147.

Jorgenson, D. (1963). Capital Theory and Investment Behavior. AER 53, 2, 247–259.

Jürgens, U., Naumann, K., Rupp, J. (2000). Shareholder Value in An Adverse Environment: The German Case. Economy and Society 29, 1, 54–79.

Kalecki, M. (1954). Theory of Economic Dynamics. Reprinted in J. Osiatynski (ed.). Collected Works of Michal Kalecki, Vol. 1, Clarendon Press, Oxford.

Lavoie, M. (1992). Foundations of Post-Keynesian Economic Analysis. Aldershot, Edward Elgar.

Lazonick, W., O'Sullivan, M. (2000). Maximising Shareholder Value: A New Ideology for Corporate Governance. In: Economy and Society 29, 1, 13–35.

Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. In: Journal Economic Literature 35, 2, 688–726.

Mankiw, G. (1988). New Issues in Corporate Finance: Comments. EER 32, 5, 1183–1186.

Marglin, S., Bhaduri, A. (1990). Profit Squeeze and Keynesian Theory. In: S. Marglin and J. Schor (eds.). The Golden Age of Capitalism. Reinterpreting the Postwar Experience. Oxford, Clarendon.

Mayer, C. (1988). New Issues in Corporate Finance. In: European Economic Review 32, 1167–1189.

Meyer, J., Kuh, E. (1957). The Investment Decision. Cambridge, MA, Harvard University Press.

McCloskey, D., Ziliak, S. (1996). The Standard Error of Regressions. In: Journal of Economic Literature 34, 1, 97–114.

Morck, R., Shleifer, A., Vishny, R. (1990). The Stock Market and Investment: Is the Market a Sideshow? BPAE 2, 1990, 157–202.

Modigliani, F., Miller, M. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. AER XLVIII, 3, 261–297.

Myers, S. (2001). Capital Structure. In: Journal of Economic Perspectives 15, 2, 81–102.

Myers, S., Majluf, N. (1984). Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. In: Journal of Financial Economics 13, 2, 187–221.

OECD (1998). Shareholder Value and the Market in Corporate Control in OECD Countries. In: Financial Market Trends 69, 15–38.

Poterba, J., Samwick, A. (1995). Stock Ownership Patterns, Stock Market Fluctuations, and Consumption. BPAE 2, 1995, 295–358.

Poterba, J. (2000). Stock Market Wealth and Consumption. In: Journal of Economic Perspectives, Vol. 14, No. 2.

Rajan, R., Zingales, L. (2001). The Great Reversals: The Politics of Financial Development in the 20th Century. In: NBER Working Paper 8178.

Schaberg, M. (1999). Globalization and the Erosion of National Financial Systems. Is Declining Autonomy Inevitable? Cheltenham, UK, Edward Elgar.

Stockhammer, E. (2004). Financialization and the Slowdown of Accumulation. In: Cambridge Journal of Economics, forthcoming.

Tease, W. (1993). The Stock Market and Investment. OECD Economic Studies 20, 41–61.

Tobin, J. (1969). A General Equilibrium Approach to Monetary Theory. In: Journal for Money Credit and Banking 1, 1, 15–29.

Appendix

Data Definitions and Sources		
Variable	Definition	Source
ACCU	growth rate of gross business sector capital stock	OECD Economic Outlook database
Growth	growth real business sector GDP	OECD Economic Outlook database
PS	profit share in the business sector	OECD Economic Outlook database
CC	relative cost of capital: deflator of capital goods plus short run interest rate / real wage costs	OECD Economic Outlook database
RSNF	interest and dividend income of non-financial businesses/value added of non-financial businesses	OECD National Accounts, Vol. II database

Financial Development and Macroeconomic Volatility: Evidence from OECD Countries

1 Introduction

Franz R. Hahn[1]

Empirical evidence is increasingly supporting the view that stock markets do matter as an overall growth factor. Only recently has an OECD study provided new empirical evidence suggesting that since the 1970s stock market development may have promoted economic growth in high-income countries (see Leahy et al., 2001). These findings have been questioned by Hahn (2002a, 2002d) on the grounds that these studies use financial development indicators which are highly biased by price effects. Hahn (2002a, 2002d) shows that, when price effects are appropriately controlled for, the positive linkage between stock market development and economic growth in high-income countries is no longer statistically significant.

Another topic closely related to the "finance matters discussion" but only recently brought to the forefront is the link between the depth and structure of a country's financial sector and the magnitude or severity of its macroeconomic cycle. In contrast to the finance-growth literature where empirical and theoretical research is roughly balanced, most work dealing with the finance-cycle nexus is still theoretical. The substance of this literature is that economies with highly developed financial markets are superior to financially less-developed economies in allocating resources and in sharing risks, respectively. As a result, economies with well-developed financial markets are supposed to serve as shock absorbers and as such are to be better capable of reducing aggregate output fluctuations than bank-based economies. Yet, in following Allen and Gale (2000), there is also a sense in which economies with fewer choices of financial instruments can offer superior sharing of macroeconomic (or nondiversifiable) risks. By pointing to countries such as Japan, Germany and France, Allen and Gale (2000) praise the virtue of holding large amounts of wealth in the form of bank deposits in order to shield private households from fluctuations in the value of assets that are marked to market. This view is in line with empirical research indicating that the risk management and information processing provided by banks may be particularly important in reducing overall output volatility (Denizer, Iyigun and Owen, 2000).

In this paper, we revisit the link between financial development and macroeconomic volatility by exploring some of the ways through which financial development may affect business cycle fluctuations. First of all we examine whether financial development exerts an unambiguous effect on macroeconomic volatility. Building on theoretical work related to at least two different strands, we then investigate the role financial development has in the propagation of real and monetary shocks. The latter work suggests overwhelmingly that the effect of real shocks be dampened by well-developed financial systems while monetary shocks are magnified.

The remainder of the paper is structured as follows. In section 2, we give a short overview of the relevant lines of theoretical work studying the effects of financial systems on output fluctuations. In section 3, we discuss our estimation strategy and data. In section 4 we present our main findings and conduct a sensitivity analysis. Section 5 concludes.

2 Theoretical Motivation

2.1 Financial Development, Competition and Insurance

A widely held presumption is that markets tend to accentuate the difference between the incompetent, the unskilled, or the untalented and the more qualified, thus exacerbating the need for insurance (Rajan and Zingales, 1999a). Competitive markets are often accused of lightly destroying old relationship-based structures of insurance while not providing enough protection against risks which come naturally with a more advanced competitive outside environment. In general, risks created by the expansion of markets are assumed to be hard to diversify away.

As to financial markets, it is widely undisputed that market-based financial systems are better than relationship-based financial systems at supplying investors with state-of-the-art opportunities for diversifying idiosyncratic risks. Moreover, market-driven systems are also said to have a greater allocative efficiency capacity than intermediation-driven systems. In good times, the advantages of developed financial markets, by making everybody better off, by far outweigh the disadvantages associated with markets, such as the lack of insurance, which is of course not considered a loss in times of plenty. In bad times, however, even almost perfectly hedged positions all too often turn out not to be much of a cover, since counterpart risks tend to be highly positively correlated with macroeconomic shocks. This breeds systemic risks which, in overly market-oriented economies, are said to be particularly hard to cope with without government assistance. Thus, as put in Rajan and Zingales (1999a), competition, when coupled with the lack of commitment that leads to incomplete contracting and free-riding, makes it hard for markets to provide the necessary cross-subsidies that mitigate its harshness. In order to provide insurance in countries with market-oriented financial systems, the respective governments are often called upon to play an active role, or at least convey to the electorate their firm determination to intervene in the working of markets whenever shocks occur, triggering trouble too big for a market system to settle on its own.

Proceeding along this line of reasoning, Allen and Gale (2000) explore a strategy suitable to hedge for nondiversifiable risks. They argue that where incomplete markets do not provide for effective intertemporal smoothing, long-lived financial institutions such as banks can do so. Intermediaries are said to be capable of providing insurance ex post by making transfers that act as a substitute for missing markets. However, banks can only supply this service as long they are not subject to competition from financial markets. The point is that "in good times individuals would rather opt out of the banking system and invest in the market, so in the long run, intertemporal smoothing by banks is not viable in the presence of competition from markets" (Allen and Gale, 2000, p. 156).

The substance of this literature is that financial development proceeds along the lines of more arm's length financing at the expense of relationship lending, of more competition at the expense of crony capitalism, and of higher standards of disclosure and accountability at the expense of business opaqueness. The downside is that financial development is assumed to be closely associated with increasing macroeconomic volatility. That is to say, this view suggests that there

be an unambiguous, positive relationship between financial development and business cycle volatility. Among other things, this hypothesis is being tested in this paper.

2.2 Financial Development and Shock Propagation

An interesting aspect of the relationship between finance and macroeconomic volatility is the interaction of financial development and real and monetary volatility and its effect on aggregate output fluctuation. Contrary to the view just outlined, this strand of work does not propose an unambiguous effect of financial development on the business cycle volatility. However, as so often theoretical evidence on shock propagation through financial development (that is, arm's length financing or relationship lending) is rather mixed.

A relevant line of work based on capital market imperfections stresses the amplifying effects on the propagation of real shocks due to finance. Not surprisingly, the channels through which capital markets imperfections work their way through the economy depend heavily on the structure of the model. In their seminal paper, Kiyotaki and Moore (1997) argue that the effects of temporary productivity shocks may be amplified by capital market imperfections which tend to affect the net wealth of credit-constrained borrowers. Similarly, Bernanke and Gertler (1990) show that business cycle volatility is very likely to be exacerbated by shocks to the net worth of borrowers due to an accelerator effect on investment.

A second strand of literature questions the presumption that capital market imperfections systematically destabilize the business cycle. This line of research raises the point that the seemingly exacerbating impact of imperfect capital markets on business cycle volatility is mainly due to models constructed on special assumptions. Bacchetta and Caminal (2000) develop a dynamic general equilibrium macroeconomic model with asymmetric information in credit markets which allows for analyzing in greater detail the propagation of shocks by accounting for the nature of the shocks. They show that the output response to shocks may go either way depending on how the composition of external and internal funds for credit-constrained firms is affected by the shocks. Beck, Lundberg and Majnoni (2001) extend this model and show that well-developed financial intermediaries, while dampening the effect of real sector shocks on output volatility, magnify the impact of monetary shocks on macroeconomic volatility (that is, shocks to the banks' balance sheet). The latter is explained by considerations very similar to the credit channel view of monetary policy. Beck, Lundberg and Majnoni (2001) argue that firms depend more on external resources in financially developed economies and are thus more exposed to monetary shocks that are transmitted through the financial sector. As to real shocks the argument goes that better-developed financial intermediaries alleviate the cash-flow constraint on firms which rely on external funding and therefore dampen the impact of shocks to the production function.

We base our empirical approach mainly on the work of Beck, Lundberg and Majnoni (2001). Additionally, we attempt to extend it in various ways by applying a broader set of financial development indicators, such as measures for stock market size and stock market efficiency, and by including different interactions of financial markets with different sources of volatility. Though the

model by Beck, Lundberg and Majnoni (2001) abstracts from channels other than the bank-based credit channel, there are good reasons to conjecture that their main findings hold under conditions in which shock propagation is propelled by the stock or bond market. To be more specific, we will test the following hypotheses: First, we test if there is an unambiguous effect of the stock market on the business cycle volatility as suggested by the conjecture outlined in section 2.1. Second, we check if there is empirical support for the view that not only the credit market, as predicted by the model of Beck, Lundberg and Majnoni (2001), but also the stock market magnifies monetary shocks and dampens real shocks. Further, we also test whether stock market volatility matters as an independent source of macroeconomic volatility.

Following Beck, Lundberg and Majnoni (2001), we use the standard deviation of terms-of-trade changes as a proxy for real shocks and the standard deviation of the inflation rate as a proxy for monetary shocks respectively. Departing from Beck, Lundberg and Majnoni (2001), we use the standard deviation of the aggregate output gap and the absolute difference between the maximum and the minimum of the output gap as indicators for macroeconomic volatility. In the sensitivity analysis the set of macroeconomic volatility measures is extended by the standard deviation of annual changes of real GDP per capita used by Beck, Lundberg and Majnoni (2001) as an output variability measure. The empirical analysis in this paper is based on a panel data set for 22 OECD countries while Beck, Lundberg and Majnoni (2001) cover 63 countries, including the OECD region as subset. We should also add that the empirical analysis of Beck, Lundberg and Majnoni (2001) is primarily based on a three-period panel data set aggregated over the periods 1960 through 1972, 1973 through 1985, and 1986 through 1997.

3 Data and Econometric Methodology

3.1 The Data

Our panel data set for 22 OECD countries is built over the period 1970 through 2000. Data quality, data coverage and the high degree of homogeneity of production technology are the main reasons why we restrict our analysis to the OECD countries. The empirical analyses are based on a six-period panel where the data are averaged over nonoverlapping five-year intervals aggregated over the periods 1971 through 1975, 1976 through 1980, with 1996 through 2000 representing the last period. The size of the interval is supposed to approximately cover a full length of a normal business cycle. Details about the OECD countries covered, the variables defined and the data sources referred to are given in the Annex (table A). To allow for an examination of the importance of the frequency of the data used, we also average over ten-year periods between 1971 and 2000 aggregated over the periods 1971 through 1980, 1981 through 1990, and 1991 through 2000.

As indicators for fluctuation, we use ex post measures of volatility based on the historical data. A few studies choose an ex ante approach, which separates out the unexpected part of volatility by using some form of forecast or expectation formation procedures (i.e., Ramey and Ramey, 1995). Since ex ante measures are difficult to construct satisfactorily and, in addition, are likely to lean towards unintentionally removing valuable information from the data, we

stick to the ex post approach. Thus, as the dependent variable in our regression approach, we alternately use, as already mentioned, according to the period chosen (i. e., five- or ten-year period), the standard deviation of the aggregate output gap (CY_SD) and the difference between the maximum and the minimum of the output gap (CY_DIFF). Though these indicators are certainly imperfect output volatility measures they seem to portray sufficiently well those short-lived shocks which are mainly associated with the business cycle. In the sensitivity analyses, we additionally use the standard deviation of growth in real per capita GDP (GDPC_SD) as an indicator for macroeconomic volatility.

Further, we identify CAP (defined as the value of listed shares on domestic exchanges divided by GDP), LIQ (defined as the value of the trades of domestic shares on domestic exchanges divided by GDP), and TURN (defined as LIQ divided by CAP) as indicators for the strength of arm's length financing and, according to the reasoning in the preceding section, as indicators for the level of overall financial development. CAP measures the size of the stock market while LIQ and TURN are supposed to capture the liquidity and efficiency level of the stock market, respectively. CREDIT equals the value of credits by financial intermediaries to the private sector divided by GDP and is our preferred indicator for the strength of relationship lending. According to Levine, Loayza and Beck (2000), CREDIT is a reasonably accurate measure of a country's level and sophistication of financial intermediation and relatively unbiased by the relative importance of state-owned enterprises and the overall level of nationalization. In addition, we use as an overall measure of financial development a conglomerate index of financial structure constructed by Demirgüc-Kunt and Levine (2001). This index, denoted STRUCTURE, is based on measures of size, activity, and efficiency. Higher values of STRUCTURE indicate that the financial system is relatively more market-based than bank-based. For the countries covered STRUCTURE ranges from –0.75 to 2.00.

The set of variables that serves as conditioning information consists of OPEN (equaling exports plus imports of goods divided by GDP), KQ (representing the sum of foreign inflows and domestic outflows of capital divided by GDP), GOV (as measured by government consumption expenditure divided by GDP), INF (denoting the annual inflation rate) and of INF_SD (representing the standard deviation of the quarterly inflation rate). The latter two variables are to reflect demand shocks. Given an upward sloping aggregate supply curve, inflation and its volatility are correlated with output growth variability.

OPEN stands for the "real outward orientation" of an economy and thus for the overall degree to which a country is exposed to external real shocks while KQ is taken as a measure of financial openness and capital account liberalization.

Measuring the size of the government, GOV, provides a convenient summary of the strength of the internally stabilizing economic conditions in a given country.

According to the volatility measures approach chosen, INF_SD is used as the main indicator for measuring the magnitude of monetary shocks or monetary policy volatility and the standard deviation of terms of trade changes (TOT_SD) is considered to be most suitable to capture the magnitude of real shocks. The standard deviation of the quarterly changes of the three-month money market

rate (R3M_A1_SD) also provides valuable information on the size of monetary shocks and monetary policy interventions, respectively.

The standard deviation of KQ on a quarterly basis, denoted by KQ_SD, is used as an indicator for the exposure of a country to the variability of international financing.

Finally, stock market volatility is calculated by (a) the procedure proposed by Schwert (1989) and (b) the standard deviation of monthly share price changes. The former is denoted VOL, the latter VOL_SD.

For the purpose of detecting whether financial development has a role in shock propagation, we also construct a set of interaction terms between financial development indicators such as CAP, TURN, CREDIT and STRUCTURE and monetary and real volatility measures such as INF_SD and TOT_SD, respectively.

An overview of the summary statistics and correlation is given in the Annex, table B.

3.2 Econometric Methodology

Methodologically, we use two econometric techniques: (a) an instrumental variable estimator and (b) the standard fixed effects estimator. Obviously, given the nature of the investigation the application of static panel estimators appears to be appropriate due to the very small efficiency gains which can be expected by using dynamic panel estimators such as Arellano and Bond's one-step GMM estimator in the given context. However, the relationships studied in this paper suggest that joint endogeneity of most variables involved cannot be excluded for sure, though it may not be very likely that two-way causality or simultaneity cause substantial consistency losses. To play it safe we apply a two-stage instrumental variable procedure to ensure that the estimates of the coefficients are consistent. Since GMM-type instruments have not performed well, we rather apply the IV estimator advocated by Anderson and Hsiao (1982) to our static setup. In so doing, we control as rigorously as possible for the potential consistency problems caused by simultaneity, omitted variables and unobserved country-specific effects in the given framework.

Encouraged by various endogeneity checks, we hold that consistency losses due to joint endogeneity of the explanatory variables are of a minor order and thus take the computationally simpler standard fixed effects model to be an appropriate alternative specification. The fixed effects estimator is designed to capture variation across countries and time periods in simple shifts of the regression function (i.e. changes in the intercepts). According to Judson and Owen (1999), the fixed effects estimator compares quite well to other estimators in typical static macro panel setups for two reasons: First, a macro panel most likely encompasses most of the countries of interest and, second, given that the individual effect represents omitted variables, the country-specific characteristics are very likely to be correlated with the other regressors. Under these preconditions, the fixed effects least squares, also known as least squares dummy variable estimator (LSDV), generates an unbiased estimate of the coefficients.

The basic regression equation estimated by both techniques takes the following form:

$$\sigma_{i,t} = \alpha + \beta \; FINANCE_{i,t} + \gamma [INTERACTING \; SET]_{i,t}$$

$$+ \delta [CONDITIONING \; SET] + \lambda_t + \eta_i + \varepsilon_{i,t} \quad\quad (1)$$

with time periods $t = 1, ..., T$; and countries $i = 1, ..., N$. The λ_t and η_i are respectively time- and country-specific effects, and $\varepsilon_{i,t}$ is the remainder stochastic disturbance term. The dependent variable $\sigma_{i,t}$ equals either CY_SD, or CY_DIFF; the regressor FINANCE equals either CAP, TURN, CREDIT, or STRUCTURE; the INTERACTING SET consists of interaction terms of FINANCE variables with variables of the CONDITIONING SET such as INF_SD, TOT_SD, VOL_SD and VOL, respectively. The set of conditioning information also contains the variables KQ_SD, KQ, OPEN, and GOV. As already mentioned, the latter three variables are included to control for the prime external and internal factors closely associated with the magnitude of output growth fluctuations at the macroeconomic level.

As specification tests for the IV estimator we use a Sargan test of overidentifying restrictions and a test of lack of residual serial correlation. A persistent serial correlation of the residuals indicates that unobserved groupspecific effects are present.

4 The Findings

4.1 Regressions Results

We start with presenting the regression results from our 22 OECD country panel, with data averaged over six subperiods from 1971 through 2000, based on the reduced-form regression similar in spirit to the specification run by Beck, Lundberg and Majnoni (2001). The specification used in this paper differs from that in Beck, Lundberg and Majnoni (2001) in that the variables defined to capture the interaction of financial development and real or monetary volatility enter the equation lagged by one period in order to avoid instability in the parameter estimates due to multicollinearity. The latter is caused by the correlation of the interaction terms with their components. In addition, the conditioning information set of our regression approach also contains the logarithm of GOV, which is an appropriate measure of government size and thus most suitable to capture the independent and supposedly mitigating impact of a large government sector on macroeconomic volatility.

The results in table 1 confirm the findings of Beck, Lundberg and Majnoni (2001) as to the magnifying effect of financial intermediary development on the propagation of monetary volatility, but show far stronger evidence in favor of a mitigating effect of financial intermediary development on the propagation of real shocks. In accordance with Beck, Lundberg and Majnoni (2001), we also detect no unambiguous relationship between financial intermediary development, as represented by the logarithm of CREDIT, and the magnitude of business cycle volatility. The regression results also indicate that more open economies face larger business cycle fluctuations, while countries with a large government enjoy the opposite. Both results meet our expectations. Not surprisingly, inflation and terms of trade volatility enhance macro volatility independently.

Table 1

Fixed Effects Estimation

1971 through 2000, five-year averages

Dependent Variables	CY_SD	CY_DIFF	CY_SD	CY_DIFF	CY_SD	CY_DIFF
Regressors						
Constant	−0.0022	0.0002	0.0043	0.0163	0.0087	0.0217
	(0.687)	(0.988)	(0.297)	(0.086)	(0.096)	(0.060)
$\ln(GOV)_t$	−0.0093	−0.0158	−0.0053	−0.0065	−0.0051	−0.0054
	(0.004)	(0.028)	(0.018)	(0.215)	(0.071)	(0.420)
$\ln(OPEN)_t$	0.0036	0.0086	0.0038	0.0090	0.0054	0.0115
	(0.007)	(0.003)	(0.004)	(0.003)	(0.006)	(0.013)
INF_SD_t	0.0008	0.0029	0.0008	0.0030	0.0008	0.0027
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TOT_SD_t	0.0098	0.0290	0.0107	0.0308	0.0110	0.0325
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
$\ln(CREDIT)_t$	−0.0008	−0.0024				
	(0.642)	(0.586)				
interaction $(\ln(CREDIT)*INF\_SD)_{t-1}$	0.0003	0.0008				
	(0.000)	(0.000)				
interaction $(\ln(CREDIT)*TOT\_SD)_{t-1}$	−0.0765	−0.1638				
	(0.001)	(0.001)				
$\ln(CAP)_t$			0.0012	0.0037		
			(0.308)	(0.087)		
interaction $(\ln(CAP)*INF\_SD)_{t-1}$			0.0001	0.0003		
			(0.001)	(0.000)		
interaction $(\ln(CAP)*TOT\_SD)_{t-1}$			−0.0470	−0.1105		
			(0.010)	(0.003)		
$\ln(TURN)_t$					0.0027	0.0054
					(0.017)	(0.035)
interaction $(\ln(TURN)*INF\_SD)_{t-1}$					0.0002	0.0003
					(0.000)	(0.013)
interaction $(\ln(TURN)*TOT\_SD)_{t-1}$					−0.0546	−0.1314
					(0.014)	(0.003)
R^2	0.426	0.499	0.380	0.473	0.389	0.472
			p-values			
Wald test for joint significance	0.000	0.000	0.000	0.000	0.000	0.000
joint group dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
time dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
Serial correlation test						
AR (1)	0.935	0.969	0.367	0.633	0.812	0.791
AR (2)	0.347	0.413	0.231	0.309	0.478	0.486

Number of observations: 110; countries: 22. − The regressions also include dummy variables for the different time periods that are not reported; p-values in parentheses; heteroskedasticity-consistent standard errors are used.

However, when introducing stock market measures as indicators for financial development, we get partly strong empirical evidence for the popular view that there is an independent and robust relationship of arm's length financing with the severity of macroeconomic volatility. The results displayed suggest that both stock market size (less significantly) and stock market efficiency (more significantly), as measured by the logarithm of CAP and TURN, magnify cycle fluctuations, even when controlling for interactions terms. In almost all estimations, the used stock market measures CAP and, particularly, TURN enter positively and mostly significantly at the standard 5% level. The same applies to their interaction with the standard deviation of inflation and the standard deviation of terms-of-trade changes, respectively, though with the expected offsetting signs on the two interaction terms. However, as the results in table 2 show that this evidence weakens when both CREDIT and CAP, or TURN,

Table 2

Fixed Effects Estimation

1971 through 2000, five-year averages

Dependent Variables	CY_SD	CY_DIFF	CY_SD	CY_DIFF
Regressors				
Constant	−0.0008	0.0060	−0.0016	0.0062
	(0.890)	(0.637)	(0.818)	(0.661)
$\ln(GOV)_t$	−0.0079	−0.0119	−0.0091	−0.0134
	(0.019)	(0.105)	(0.011)	(0.076)
$\ln(OPEN)_t$	0.0035	0.0082	0.0055	0.0116
	(0.006)	(0.003)	(0.001)	(0.002)
INF_SD_t	0.0008	0.0029	0.0009	0.0030
	(0.000)	(0.000)	(0.000)	(0.000)
TOT_SD_t	0.0103	0.0305	0.0087	0.0284
	(0.000)	(0.000)	(0.002)	(0.000)
$\ln(CREDIT)_t$	−0.0022	−0.0067	−0.0013	−0.0045
	(0.283)	(0.205)	(0.526)	(0.377)
interaction $(\ln(CREDIT)*INF\_SD)_{t-1}$	0.0008	0.0017	0.0003	0.0007
	(0.252)	(0.156)	(0.349)	(0.156)
interaction $(\ln(CREDIT)*TOT\_SD)_{t-1}$	−0.0705	−0.1276	−0.0480	−0.0792
	(0.061)	(0.107)	(0.075)	(0.164)
$\ln(CAP)_t$	0.0009	0.0036		
	(0.340)	(0.056)		
interaction $(\ln(CAP)*INF\_SD)_{t-1}$	−0.0002	−0.0005		
	(0.471)	(0.392)		
interaction $(\ln(CAP)*TOT\_SD)_{t-1}$	−0.0064	−0.0309		
	(0.769)	(0.467)		
$\ln(TURN)_t$			0.0023	0.0046
			(0.004)	(0.016)
interaction $(\ln(TURN)*INF\_SD)_{t-1}$			0.0000	0.0000
			(0.911)	(0.929)
interaction $(\ln(TURN)*TOT\_SD)_{t-1}$			−0.0292	−0.0856
			(0.106)	(0.012)
R^2	0.448	0.522	0.461	0.531
	p-values			
Wald test for				
joint significance	0.000	0.000	0.000	0.000
joint group dummy significance	0.000	0.000	0.000	0.000
time dummy significance	0.000	0.000	0.000	0.000
Serial correlation test				
AR (1)	0.715	0.846	0.597	0.666
AR (2)	0.318	0.369	0.383	0.450

Number of observations: 110; countries: 22. — The regressions also include dummy variables for the different time periods that are not reported; p-values in parentheses; heteroskedasticity-consistent standard errors are used.

enter the equation simultaneously. This is most likely due to multicollinearity, which increases the size of the estimated variance.

The results presented in table 3 and table 4 are obtained by IV estimations of an augmented version of the basic specification. Empirical evidence suggests that increasing financial openness tends to decrease short-term macro volatility, while theory is still rather mixed on this topic (see, among others, Basu and Taylor, 1999, and Buch, Döpke and Pierdzioch, 2002). Financial openness is assumed to alleviate external funding constraints of leveraged firms and ease risk diversification for private households, both of which is expected to smooth out aggregate output growth intertemporally. However, there is also the presumption that international financial integration favors the flow of highly volatile short-term capital, thereby increasing business cycle fluctuations. We account for these seemingly offsetting independent impacts of financial openness on macro volatility by adding the variables KQ and KQ_SD to the regression equation. We use these simple measures instead of constructing more complex

Two-Stage Instrument Variable Estimation

1971 through 2000, five-year averages

Dependent Variables	CY_SD	CY_DIFF	CY_SD	CY_DIFF	CY_SD	CY_DIFF
Regressors						
Constant	−0.0015	0.0029	0.0056	0.0195	0.0065	0.0201
	(0.750)	(0.792)	(0.183)	(0.043)	(0.244)	(0.090)
$\ln(GOV)_t$	−0.0104	−0.0164	−0.0073	−0.0091	−0.0067	−0.0075
	(0.000)	(0.012)	(0.001)	(0.104)	(0.004)	(0.193)
$\ln(OPEN)_t$	0.0059	0.0118	0.0064	0.0130	0.0064	0.0128
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.002)
INF_SD_t	0.0008	0.0029	0.0008	0.0030	0.0009	0.0030
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TOT_SD_t	0.0190	0.0504	0.0189	0.0495	0.0165	0.0446
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
KQ_t	−0.0385	−0.0856	−0.0336	−0.0749	−0.0235	−0.0515
	(0.004)	(0.001)	(0.014)	(0.016)	(0.077)	(0.078)
KQ_SD_t	0.0263	0.0613	0.0221	0.0521	0.0160	0.0380
	(0.012)	(0.004)	(0.036)	(0.031)	(0.124)	(0.100)
$\ln(CREDIT)_t$	0.0002	−0.0009				
	(0.885)	(0.814)				
interaction $(\ln(CREDIT)*INF\_SD)_{t-1}$	0.0003	0.0008				
	(0.000)	(0.000)				
interaction $(\ln(CREDIT)*TOT\_SD)_{t-1}$	−0.0799	−0.1689				
	(0.000)	(0.000)				
$\ln(CAP)_t$			0.0021	0.0051		
			(0.094)	(0.038)		
interaction $(\ln(CAP)*INF\_SD)_{t-1}$			0.0001	0.0003		
			(0.001)	(0.000)		
interaction $(\ln(CAP)*TOT\_SD)_{t-1}$			−0.0460	−0.1083		
			(0.012)	(0.003)		
$\ln(TURN)_t$					0.0029	0.0063
					(0.019)	(0.031)
interaction $(\ln(TURN)*INF\_SD)_{t-1}$					0.0002	0.0004
					(0.000)	(0.000)
interaction $(\ln(TURN)*TOT\_SD)_{t-1}$					−0.0599	−0.1431
					(0.007)	(0.001)
p-values						
Wald test for						
joint significance	0.000	0.000	0.000	0.000	0.000	0.000
joint group dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
time dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
Sargan test[1]	0.608	0.496	0.503	0.381	0.424	0.471
Serial correlation test						
AR (1)	0.578	0.870	0.273	0.615	0.644	0.866
AR (2)	0.096	0.107	0.104	0.135	0.188	0.192

Number of observations: 105; countries: 21. − The regressions also include dummy variables for the different time periods that are not reported; the endogenous variable lagged one period and fixed investment divided by gross domestic product are added as additional instruments; p-values in parentheses; heteroskedasticity-consistent standard errors are used.
[1] The null hypothesis is that the instruments used are not correlated with the residuals.

ones (i.e., based on principal components) because of the poor quality of the available capital account data. For this reason, we also refrain from controlling for the interaction of financial openness with the sources of real and monetary shocks as suggested by theory.

We take it as an encouraging sign that the Sargan and serial correlation tests support this extended version of our base model.

As to financial openness, the results match the predictions just outlined while not interfering with the results already established. The degree of financial integration of a high-income economy as measured by KQ dampens the business cycle, while the volatility of international capital flows as measured by KQ_SD magnifies overall macro output fluctuations.

Table 4

Two-Stage Instrument Variable Estimation

1971 through 2000, five-year averages

Dependent Variables	CY_SD	CY_DIFF	CY_SD	CY_DIFF
Regressors				
Constant	0.0010	0.0101	0.0024	0.0114
	(0.830)	(0.353)	(0.697)	(0.399)
$\ln(GOV)_t$	−0.0101	−0.0148	−0.0090	−0.0121
	(0.000)	(0.020)	(0.007)	(0.091)
$\ln(OPEN)_t$	0.0063	0.0128	0.0062	0.0124
	(0.000)	(0.000)	(0.000)	(0.000)
INF_SD_t	0.0008	0.0030	0.0008	0.0030
	(0.000)	(0.000)	(0.000)	(0.000)
TOT_SD_t	0.0207	0.0539	0.0179	0.0478
	(0.000)	(0.000)	(0.000)	(0.000)
KQ_t	−0.0436	−0.0946	−0.0327	−0.0695
	(0.002)	(0.001)	(0.033)	(0.018)
KQ_SD_t	0.0290	0.0655	0.0226	0.0508
	(0.006)	(0.002)	(0.059)	(0.032)
$\ln(CREDIT)_t$	−0.0017	−0.0056	−0.0011	−0.0048
	(0.339)	(0.202)	(0.572)	(0.325)
interaction $(\ln(CREDIT)*INF\_SD)_{t-1}$	0.0010	0.0021	0.0004	0.0009
	(0.107)	(0.053)	(0.221)	(0.062)
interaction $(\ln(CREDIT)*TOT\_SD)_{t-1}$	−0.0837	−0.1529	−0.0557	−0.0936
	(0.013)	(0.034)	(0.029)	(0.088)
$\ln(CAP)_t$	0.0020	0.0053		
	(0.032)	(0.015)		
interaction $(\ln(CAP)*INF\_SD)_{t-1}$	−0.0004	−0.0007		
	(0.245)	(0.189)		
interaction $(\ln(CAP)*TOT\_SD)_{t-1}$	0.0013	−0.0159		
	(0.952)	(0.703)		
$\ln(TURN)_t$			0.0023	0.0057
			(0.042)	(0.032)
interaction $(\ln(TURN)*INF\_SD)_{t-1}$			−0,0000	−0.0001
			(0.867)	(0.702)
interaction $(\ln(TURN)*TOT\_SD)_{t-1}$			−0.0234	−0.0741
			(0.231)	(0.044)
p-values				
Wald test for				
joint significance	0.000	0.000	0.000	0.000
joint group dummy significance	0.000	0.000	0.000	0.000
time dummy significance	0.000	0.000	0.000	0.000
Sargan test[1]	0.599	0.400	0.617	0.525
Serial correlation test				
AR (1)	0.469	0.734	0.541	0.760
AR (2)	0.083	0.098	0.148	0.157

Number of observations: 105; countries: 21. − The regressions also include dummy variables for the different time periods that are not reported; the endogenous variable lagged one period and fixed investment divided by gross domestic product are added as additional instruments; p-values in parentheses; heteroskedasticity-consistent standard errors are used.
[1] *The null hypothesis is that the instruments used are not correlated with the residuals.*

Building on the results obtained by these estimations we ran various regressions, all of which aimed to search for an independent relationship of financial development, as measured by the importance of arm's length financing, with overall business cycle volatility. The results are shown in table 5 to table 7 and mostly confirm the robustness of our main finding that there seems to an unambiguous effect of financial development on the business cycle in high-income countries. Most importantly, these results indicate, particularly significantly when CY_DIFF is used as the independent variable, that it is the interaction of stock market size and stock market volatility that matters as a source of business cycle destabilization. A noteworthy result is also that monetary shocks as measured by the monthly variability of the three-month money market rate

(R3M_A1_SD) increases the amplitude of the cycle. This effect tends to be stronger in countries with more market-based financial systems.

Table 5

Fixed Effects Estimation

1971 through 2000, five-year averages

Dependent Variables	CY_SD	CY_DIFF	CY_SD	CY_DIFF	CY_SD	CY_DIFF
Regressors						
Constant	0.0116	0.0327	0.0110	0.0311	0.0109	0.0317
	(0.031)	(0.024)	(0.039)	(0.033)	(0.055)	(0.033)
$\ln(GOV\_I)_t$	−0.0081	−0.0170	−0.0084	−0.0178	−0.0084	−0.0170
	(0.006)	(0.028)	(0.004)	(0.021)	(0.011)	(0.035)
$\ln(OPEN\_I)_t$	0.0024	0.0053	0.0025	0.0055	0.0028	0.0065
	(0.038)	(0.075)	(0.033)	(0.065)	(0.023)	(0.042)
INF_I_t	0.0003	0.0006				
	(0.000)	(0.000)				
$DEFL\_I_t$			0.0003	0.0006		
			(0.000)	(0.000)		
$R3M\_A1\_SD_t$					0.0009	0.0022
					(0.000)	(0.000)
$STRUCTURE_t$	0.0043	0.0105	0.0044	0.0108	0.0037	0.0091
	(0.012)	(0.029)	(0.014)	(0.033)	(0.044)	(0.079)
interaction	0.0000	0.0005	−0.0000	0.0004	0.0000	0.0006
$(STRUCTURE*INF\_SD)_t$	(0.339)	(0.000)	(0.569)	(0.002)	(0.284)	(0.000)
interaction	−0.1437	−0.3548	−0.1413	−0.3478	−0.1300	−0.3208
$(STRUCTURE*TOT\_SD)_t$	(0.011)	(0.020)	(0.015)	(0.026)	(0.034)	(0.055)
R^2	0.335	0.331	0.328	0.322	0.275	0.274
Number of obervations	132	132	132	132	129	129
Countries	22	22	22	22	22	22
	p-values					
Wald test for						
joint significance	0.000	0.000	0.000	0.000	0.000	0.000
joint group dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
time dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
Serial correlation test						
AR (1)	0.205	0.569	0.208	0.594	0.178	0.433
AR (2)	0.879	0.520	0.906	0.574	0.466	0.256

_I … Initial values. The regressions also include dummy variables for the different time periods that are not reported; p-values in parentheses; heteroskedasticity-consistent standard errors are used.

Table 6

Fixed Effects Estimation

1971 through 2000, five-year averages

Dependent Variables	CY_SD	CY_DIFF	CY_SD	CY_DIFF	CY_SD	CY_DIFF
Regressors						
Constant	0.0044	0.0196	0.0024	0.0138	0.0022	0.0134
	(0.519)	(0.258)	(0.744)	(0.439)	(0.778)	(0.472)
$\ln(GOV\_I)_t$	−0.0116	−0.0234	−0.0116	−0.0233	−0.0117	−0.0235
	(0.008)	(0.030)	(0.011)	(0.035)	(0.010)	(0.034)
$\ln(OPEN\_I)_t$	0.0039	0.0083	0.0042	0.0091	0.0041	0.0089
	(0.035)	(0.075)	(0.034)	(0.067)	(0.033)	(0.067)
INF_I_t	0.0008	0.0019				
	(0.001)	(0.001)				
INF_t			0.0766	0.2051	0.0740	0.1993
			(0.020)	(0.006)	(0.018)	(0.006)
interaction $(\ln(CAP)*VOL\_SD)_t$	0.0002	0.0006	0.0003	0.0007		
	(0.116)	(0.062)	(0.103)	(0.038)		
interaction $(\ln(CAP)*VOL)_t$					0.0003	0.0009
					(0.168)	(0.086)
R^2	0.239	0.241	0.219	0.224	0.214	0.219
	p-values					
Wald test for						
joint significance	0.000	0.000	0.039	0.017	0.031	0.008
joint group dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
time dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
Serial correlation test						
AR (1)	0.161	0.113	0.201	0.144	0.218	0.156
AR (2)	0.644	0.519	0.758	0.559	0.791	0.592

_I ... Initial values. Number of observations: 108; countries: 18. − The regressions also include dummy variables for the different time periods that are not reported; p-values in parentheses; heteroskedasticity-consistent standard errors are used.

Table 7

Fixed Effects Estimation

1971 through 2000, five-year averages

Dependent Variables	CY_SD	CY_DIFF	CY_SD	CY_DIFF	CY_SD	CY_DIFF
Regressors						
Constant	0.0119	0.0298	0.0172	0.0422	0.0171	0.0421
	(0.044)	(0.074)	(0.000)	(0.000)	(0.000)	(0.000)
$\ln(\text{GOV\_I})_t$	−0.0087	−0.0203				
	(0.012)	(0.026)				
$\ln(\text{OPEN\_I})_t$	0.0029	0.0060				
	(0.038)	(0.067)				
INF_t			0.0742	0.1946	0.0714	0.1884
			(0.024)	(0.005)	(0.022)	(0.005)
TOT_SD_t			0.0188	0.0484	0.0188	0.0485
			(0.001)	(0.000)	(0.001)	(0.000)
interaction $(\text{STRUCTURE}*\text{TOT\_SD})_t$	−0.0961	−0.1988				
	(0.005)	(0.055)				
interaction $(\text{STRUCTURE}*\text{R3M\_A1\_SD})_t$	0.0009	0.0023				
	(0.000)	(0.003)				
interaction $(\ln(\text{CAP})*\text{VOL\_SD})_t$			0.0002	0.0006		
			(0.134)	(0.043)		
interaction $(\ln(\text{CAP})*\text{VOL})_t$					0.0003	0.0008
					(0.234)	(0.107)
R^2	0.268	0.245	0.201	0.233	0.197	0.228
Number of observations	129	129	108	108	108	108
Countries	22	22	18	18	18	18
			p-values			
Wald test for						
joint significance	0.000	0.000	0.012	0.001	0.011	0.001
joint group dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
time dummy significance	0.000	0.000	0.000	0.000	0.000	0.000
Serial correlation test						
AR (1)	0.216	0.510	0.160	0.128	0.177	0.143
AR (2)	0.351	0.217	0.405	0.190	0.427	0.194

_I ... Initial values. − The regressions also include dummy variables for the different time periods that are not reported; p-values in parentheses; heteroskedasticity-consistent standard errors are used.

4.2 Sensitivity Analyses

In order to gauge the robustness of our findings, we carried out a large number of checks. To this end, we divided our data set in ten-year periods, aggregated over the periods 1971 through 1980, 1981 through 1990, and 1991 through 2000, included GDPC_SD as an additional measure of macro output volatility, and reestimated various model specifications with LSDV. To sum up, the results in table 8 to table 10 show that the presented findings as to the empirical relevance of an independent relationship of stock market development with macroeconomic volatility survive many of the robustness tests conducted. More sensitivity results are available on request.

Table 8

Sensitivity Test – Fixed Effects Estimation

1971 through 2000, ten-year averages

Dependent Variables	GDPC_SD	CY_SD	GDPC_SD	CY_SD	GDPC_SD	CY_SD
Regressors						
Constant	−0.0030	0.0089	0.0082	0.0199	0.0022	0.0145
	(0.518)	(0.150)	(0.239)	(0.005)	(0.751)	(0.048)
$\ln(GOV)_t$	−0.0114	−0.0044	−0.0095	−0.0015	−0.0109	−0.0058
	(0.005)	(0.260)	(0.053)	(0.669)	(0.030)	(0.170)
$\ln(OPEN)_t$	0.0044	0.0015	0.0053	0.0024	0.0048	0.0040
	(0.093)	(0.353)	(0.030)	(0.159)	(0.115)	(0.160)
INF_SD_t	0.0035	0.0023	0.0018	0.0010	0.0016	0.0007
	(0.000)	(0.000)	(0.020)	(0.001)	(0.000)	(0.000)
TOT_SD_t	−0.0307	−0.0343	−0.0553	−0.0614	−0.0756	−0.0704
	(0.037)	(0.094)	(0.013)	(0.015)	(0.019)	(0.092)
$\ln(CREDIT)_t$	−0.0005	0.0040				
	(0.898)	(0.354)				
interaction $(\ln(CREDIT)*INF\_SD)_t$	0.0018	0.0012				
	(0.000)	(0.000)				
interaction $(\ln(CREDIT)*TOT\_SD)_t$	−0.1147	−0.1439				
	(0.006)	(0.020)				
$\ln(CAP)_t$			0.0037	0.0054		
			(0.014)	(0.019)		
interaction $(\ln(CAP)*INF\_SD)_t$			0.0004	0.0002		
			(0.102)	(0.047)		
interaction $(\ln(CAP)*TOT\_SD)_t$			−0.0916	−0.1091		
			(0.002)	(0.003)		
$\ln(TURN)_t$					0.0014	0.0040
					(0.478)	(0.093)
interaction $(\ln(TURN)*INF\_SD)_t$					0.0005	0.0002
					(0.001)	(0.079)
interaction $(\ln(TURN)*TOT\_SD)_t$					−0.1040	−0.1009
					(0.005)	(0.046)
R^2	0.508	0.410	0.448	0.400	0.467	0.335

	p-values					
Wald test for						
joint significance	0.000	0.000	0.000	0.000	0.000	0.000
joint group dummy significance	0.150	0.003	0.384	0.000	0.491	0.001
time dummy significance	0.142	0.041	0.271	0.026	0.319	0.033
Serial correlation test						
AR (1)	0.749	0.816	0.406	0.551	0.624	0.870
AR (2)	0.945	0.414	0.955	0.280	0.485	0.275

Number of observations: 66; countries: 22. The regressions also include dummy variables for the different time periods that are not reported; p-values in parentheses; heteroskedasticity-consistent standard errors are used.

Table 9

Sensitivity Test – Fixed Effects Estimation

1971 through 2000, ten-year averages

Dependent Variables	GDPC_SD	CY_SD	GDPC_SD	CY_SD
Regressors				
Constant	−0.0016	0.0129	−0.0043	0.0081
	(0.755)	(0.089)	(0.511)	(0.318)
$\ln(GOV)_t$	−0.0120	−0.0041	−0.0093	−0.0056
	(0.004)	(0.325)	(0.032)	(0.229)
$\ln(OPEN)_t$	0.0045	0.0019	0.0028	0.0020
	(0.048)	(0.269)	(0.319)	(0.409)
INF_SD_t	0.0034	0.0016	0.0036	0.0022
	(0.004)	(0.045)	(0.000)	(0.003)
TOT_SD_t	−0.0313	−0.0493	−0.0314	−0.0255
	(0.082)	(0.025)	(0.342)	(0.379)
$\ln(CREDIT)_t$	−0.0030	−0.0004	−0.0002	0.0036
	(0.562)	(0.926)	(0.954)	(0.452)
interaction $(\ln(CREDIT)*INF\_SD)_t$	0.0021	0.0011	0.0017	0.0013
	(0.001)	(0.008)	(0.000)	(0.002)
interaction $(\ln(CREDIT)*TOT\_SD)_t$	−0.1088	−0.0909	−0.1026	−0.1601
	(0.063)	(0.142)	(0.033)	(0.013)
$\ln(CAP)_t$	0.0022	0.0039		
	(0.259)	(0.020)		
interaction $(\ln(CAP)*INF\_SD)_t$	−0.0002	−0.0002		
	(0.676)	(0.445)		
interaction $(\ln(CAP)*TOT\_SD)_t$	−0.0029	−0.0456		
	(0.936)	(0.053)		
$\ln(TURN)_t$			−0.0015	0.0002
			(0.423)	(0.890)
interaction $(\ln(TURN)*INF\_SD)_t$			0.0002	−0.0002
			(0.433)	(0.390)
interaction $(\ln(TURN)*TOT\_SD)_t$			−0.0099	0.0190
			(0.812)	(0.597)
R^2	0.520	0.440	0.521	0.416

	p-values			
Wald test for				
joint significance	0.000	0.000	0.000	0.000
joint group dummy significance	0.170	0.001	0.057	0.016
time dummy significance	0.179	0.030	0.062	0.060
Serial correlation test				
AR (1)	0.986	0.951	0.873	0.792
AR (2)	0.989	0.385	0.897	0.356

Number of observations: 66; countries: 22. The regressions also include dummy variables for the different time periods that are not reported; p-values in parentheses; heteroskedasticity-consistent standard errors are used.

Table 10

Sensitivity Test – Fixed Effects Estimation

1971 through 2000, ten-year averages

Dependent Variables	GDPC_SD	CY_SD	GDPC_SD	CY_SD	GDPC_SD	CY_SD	GDPC_SD	CY_SD
Regressors								
Constant	0.0163	0.0115	0.0180	0.0169	0.0177	0.0175	0.0158	0.0116
	(0.000)	*(0.011)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.008)*
INF_t	0.1216	0.1385					0.1224	0.1439
	(0.000)	*(0.001)*					*(0.000)*	*(0.001)*
INF_SD_t			0.0026	0.0019	0.0027	0.0019		
			(0.000)	*(0.010)*	*(0.000)*	*(0.006)*		
TOT_SD_t	0.0190	0.0195	0.0199	0.0209	0.0199	0.0210	0.0188	0.0194
	(0.000)	*(0.000)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*
interaction $(\ln(CAP)*VOL\_SD)_t$					0.0006	0.0005	0.0007	0.0006
					(0.002)	*(0.046)*	*(0.000)*	*(0.003)*
interaction $(\ln(CAP)*VOL)_t$	0.0010	0.0007	0.0008	0.0005				
	(0.001)	*(0.017)*	*(0.008)*	*(0.166)*				
R^2	0.266	0.272	0.284	0.217	0.300	0.238	0.278	0.298
			p-values					
Wald test for								
joint significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
joint group dummy significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
time dummy significance	0.534	0.008	0.141	0.145	0.252	0.076	0.699	0.001
Serial correlation test								
AR (1)	0.422	0.522	0.763	0.772	0.977	0.644	0.629	0.608
AR (2)	0.094	0.103	0.060	0.069	0.069	0.063	0.117	0.097

Number of observations: 54; countries: 18. The regressions also include dummy variables for the different time periods that are not reported; p-values in parentheses; heteroskedasticity-consistent standard errors are used.

5 Concluding Remarks

This paper examined the nature of the linkage between financial development and economic fluctuation in 22 OECD countries over the period 1970 through 2000. We used two econometric techniques. The first, a cross-sectional instrument variable estimator, deals, to some degree, with the potential problems caused by simultaneity, omitted variables and unobserved country-specific effects. In addition, we use the standard fixed effects model. The latter is designed to capture variation across country and time period in simple shifts of the regression function (i.e. changes in the intercepts). The results obtained by these techniques confirm that arm's length financing has a role in destabilizing the business cycle in the OECD countries while relationship lending is neutral in this respect. The magnitude of the independent impact of the stock market on output growth fluctuation is significant. In accordance with theory, there is also a strong indication that both market-based and bank-based financial systems magnify the impact of monetary shocks on macroeconomic volatility whereas real shocks are dampened by well-developed financial systems. Finally, the results indicate that it is the interaction of stock market size and stock market volatility that matters as a source of business cycle destabilization.

It goes without saying that the presented results are highly preliminary, emphasizing very clearly that much more investigation is needed before we can be confident that there is a causal relationship between financial market development and macroeconomic volatility.

Annex

Variables and Sources

Variable	Definition	Original source	Second source
CAP	Market capitalization of domestic shares divided by gross domestic product	FIBV (gross domestic product: WIFO database)	Own calculations for 1970 through 1973
CREDIT	Claims on private sector divided by gross domestic product	IMF International Financial Statistics (lines 22d + 42d)	
CY_DIFF	Difference between minimum and maximum output gap (defined as deviation of real gross domestic product from potential gross domestic product divided by potential gross domestic product)	OECD Economic Outlook	
DEFL	Annual changes of gross domestic product deflator	WIFO database	
GDPC	Real gross domestic product per capita	OECD Economic Outlook	
GOV	Government consumption divided by gross domestic product	OECD National Accounts (gross domestic product: WIFO database)	
INF	Annual changes of consumer price index	OECD Main economic indicators	
KQ	Direct investment abroad and in reporting economy plus portfolio investment assets and liabilities divided by gross domestic product	IMF Balance of Payments Statistics (lines 4505+4555+4602+4652; gross domestic product: WIFO database)	
LIQ	Values of domestic share trading divided by gross domestic product	FIBV (gross domestic product: WIFO database)	Own calculations for 1970 through 1983
OPEN	Exports of goods plus imports of goods divided by gross domestic product	IFS (gross domestic product: WIFO database)	
R3M	Interbank 3-month interest rate	WIFO database	
STRUCTURE	Conglomerate index of financial development, constructed by *Demirgüc-Kunt and Levine* (2001)		
TOT	Terms of trade (export prices divided by import prices)	IMF International Financial Statistics	
TURN	LIQ divided by CAP		
VOL	Share price volatility, based on *Schwert* (1989)		
CY_SD	Standard deviation of output gap		
GDPC_SD	Standard deviation of quarterly real gross domestic product per capita changes		
INF_SD	Standard deviation of quarterly inflation rate		
KQ_SD	Standard deviation of KQ		
R3M_A1_SD	Standard deviation of quarterly changes of R3M		
TOT_SD	Standard deviation of quarterly terms of trade changes		
VOL_SD	Standard deviation of monthly share price changes		
Countries	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Turkey, United Kingdom, USA.		

Table B

Summary Statistics

Cross-section 1971 through 2000

	CY_SD	CY_DIFF	GDPC_SD	GOV	OPEN	KQ	CAP	LIQ	CREDIT
Descriptive statistics									
Means	0.0242	0.0947	0.0210	0.1999	0.4784	0.0893	0.3720	0.1587	0.7224
Standard deviation	0.0071	0.0320	0.0055	0.0416	0.2413	0.0886	0.2013	0.0942	0.2604
Correlations									
CY_SD	1.0000	0.9648	0.8623	0.0006	−0.0067	−0.0328	0.0942	−0.0809	−0.2568
CY_DIFF		1.0000	0.8882	−0.0779	−0.0568	−0.0828	0.1498	−0.0226	−0.2788
GDPC_SD			1.0000	−0.3255	−0.1802	−0.1777	0.0441	−0.0162	−0.1466
GOV				1.0000	0.5273	0.2823	−0.1420	−0.2120	−0.4091
OPEN					1.0000	0.8427	−0.2108	−0.3803	−0.2368
KQ						1.0000	0.0035	−0.2465	−0.1320
CAP							1.0000	0.8584	0.2636
LIQ								1.0000	0.5367
CREDIT									1.0000
TURN									
STRUCTURE									
INF									
INF_SD									
TOT_SD									
KQ_SD									
R3M_A1_SD									
VOL									
VOL_SD									

Table B

Summary Statistics (cont.)

	TURN	STRUC-TURE	INF	INF_SD	TOT_SD	KQ_SD	R3M_A1_SD	VOL	VOL_SD
Descriptive statistics									
Means	0.3227	0.0869	5.7741	4.0771	0.0591	0.1439	1.1619	3.4840	5.1294
Standard deviation	0.1566	0.7160	1.6165	1.2270	0.0312	0.2242	0.2173	0.6585	0.9492
Correlations									
CY_SD	−0.2753	−0.0447	0.4454	0.4161	0.0722	−0.0263	0.2098	0.2228	0.2557
CY_DIFF	−0.2614	0.0278	0.4668	0.4709	0.1052	−0.0724	0.3126	0.1174	0.1543
GDPC_SD	−0.0253	−0.0639	0.2683	0.3277	0.2416	−0.1433	0.2420	−0.0650	−0.0421
GOV	−0.3209	0.1215	0.0394	−0.3026	−0.6488	0.2506	0.0579	0.2162	0.1715
OPEN	−0.3704	−0.3940	−0.2385	−0.3012	−0.4695	0.7978	−0.0892	−0.0670	−0.0305
KQ	−0.3809	−0.2520	−0.2113	−0.1737	−0.3757	0.9837	−0.1516	−0.1350	−0.1335
CAP	0.1835	0.7180	0.0144	0.2650	0.0165	−0.0929	0.2928	−0.4377	−0.4275
LIQ	0.6176	0.6947	−0.2093	0.0557	0.1008	−0.3193	0.1414	−0.5025	−0.4803
CREDIT	0.5435	0.0174	−0.4453	−0.0944	0.2526	−0.1317	−0.3006	−0.2251	−0.2193
TURN	1.0000	0.2294	−0.4570	−0.3048	0.3038	−0.3986	−0.1777	−0.3787	−0.3346
STRUCTURE		1.0000	0.0386	−0.0562	−0.1298	−0.2888	0.3144	−0.3248	−0.3915
INF			1.0000	0.8218	0.2432	−0.1851	0.5830	0.6829	0.6169
INF_SD				1.0000	0.4220	−0.1651	0.5041	0.4296	0.3838
TOT_SD					1.0000	−0.3397	0.2749	0.3034	0.3193
KQ_SD						1.0000	−0.1678	−0.0801	−0.0997
R3M_A1_SD							1.0000	0.1338	0.0206
VOL								1.0000	0.9566
VOL_SD									1.0000

References

Acemoglu, D., Johnson, S., Robinson, J., Thaicharoen, Y. (2002). Institutional Causes, Macro-economic Symptoms: Volatility, Crises and Growth. NBER Working Paper No. 9124.

Acemoglu, D., Zilibotti, F. (1997). Was Prometheus Unbound by Chance? Risk, Diversification, and Growth. In: Journal of Political Economy 105. 709–751.

Aghion, P., Howitt, P. (1998). Endogenous Growth Theory. MIT Press, Cambridge.

Allen, F. (1993). Stock Markets and Resource Allocation. In: Mayer, C., Vives, X. (eds.). Capital Markets and Financial Intermediation. Cambridge University Press, Cambridge.

Allen, F., Gale, D. (2000). Comparing Financial Systems. MIT Press, Cambridge.

Anderson, T. W., Hsiao, C. (1982). Formulation and Estimation of Dynamic Models Using Panel Data. In: Journal of Econometrics, 18, 47–82.

Arellano, M., Bond, S. R. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. In: The Review of Economic Studies, 58, 277–297.

Bacchetta, P., Caminal, R. (2000). Do Capital Market Imperfections Exacerbate Output Fluctuation? In: European Economic Review, 44, 449–468.

Baliga, S., Polak, B. (2001). The Emergence and Persistence of the Anglo-Saxon and German Financial System. Yale University, Department of Economics. Mimeo.

Baltagi, B. H. (1995). Econometric Analysis of Panel Data. John Wiley & Sons, New York.

Basu, S., Taylor, A. (1999). Business Cycle in International Historical Perspective. In: Journal of Economic Perspective, 13, 45–68.

Beck, N., Katz, J. (1995). What to Do (and Not to Do) with Time-series Cross-section Data. In: American Political Science Review 89, 634–647.

Beck, T., Lundberg, M., Majnoni, G. (2001). Financial Intermediary Development and Growth Volatility: Do Intermediaries Dampen or Magnify Shocks? World Bank. Mimeo.

Beck, T., Levine, R. (2002a). Industry Growth and Capital Allocation: Does Having a Market- or Bank-based System Matter? NBER Working Paper No. 8982.

Beck, T., Levine, R. (2002b). Stock Markets, Banks, and Growth: Panel Evidence. NBER Working Paper No. 9082.

Bekaert, G., Harvey, C., Lundblad, C. (2000). Emerging Equity Markets and Economic Development. NBER Working Paper No. 7763.

Bernanke, B. S., Gertler, M. (1990). Financial Fragility and Economic Performance. In: Quarterly Journal of Economics, 105, 87–114.

Blanchard, O., Simon, J. (2001). The Long and Large Decline in U. S. Output Volatility. Brooking Papers on Economic Activity, 1, 135–164.

Blum, D., Federmair, K., Fink, G., Haiss, P. (2002). The Financial-Real Sector Nexus: Theory and Empirical Evidence, University of Economics and Business Administration, IEF Working Paper 43.

Buch, C. M. (2002). Business Cycle Volatility and Globalization: A Survey, Kiel Institute of World Economics. Working Paper No. 1107.

Buch, C. M., Döpke, J., Pierdzioch, C. (2002). Financial Openness and Business Cycle Volatility. Kiel Institute for World Economics, Working Paper No. 1121.

Demirgüc-Kunt, A., Levine, R. (eds., 2001). Financial Structure and Economic Growth – A Cross-Country Comparison of Banks, Markets, and Development. MIT Press, Cambridge.

Denizer, C., Iyigun, M. F., Owen, A. L. (2000). Finance and Macroeconomic Volatility. World Bank, Policy Research Paper 2487.

Easterly, W., Islam, R., Stiglitz, J. E. (2000). Shaken and Stirred: Explaining Growth Volatility. World Bank, Washington D.C. Mimeo.

Eichengreen, B., Leblang, D. (2002). Capital Account Liberalization and Growth: Was Mr. Mahathir Right? NBER Working Paper No. 9427.

Gorton, G., Winton, A. (2002). Financial Intermediation. NBER Working Paper No. 8928.

Greene, W. (2000). Econometric Analysis. Prentice-Hall, Inc., 4th edition.

Hahn, F. R. (2002a). The Finance-Growth Nexus Revisited: New Evidence from OECD Countries. WIFO Working Paper No. 176.

Hahn, F. R. (2002b). Financial Development and Output Growth Fluctuation: Evidence from OECD Countries. WIFO Working Paper No. 181.

Hahn, F. R. (2002c). The Politics of Financial Development – The Case of Austria. WIFO Working Paper No. 187.

Hahn, F. R. (2002d). Bedeutung von Aktienmärkten für Wachstum und Wachstumsschwankungen in den OECD-Ländern. Studie des Österreichischen Instituts für Wirtschaftsforschung im Auftrag der Bundesarbeitskammer, Vienna.

Judson, R. A., Owen, A. L. (1999). Estimating Dynamic Panel Data Models: A Guide for Macroeconomists. Economics Letters, 65, 9–15.

King, R. G., Levine, R. (1993). Finance, Entrepreneurship and Growth: Theory and Evidence. In: Journal of Monetary Economics, 32(3), 513–542.

Kiyotaki, N., Moore, J. (1997). Credit Cycles. In: Journal of Political Economy, 105, 211–248.

Kneller, R., Young, G. (2001). Business Cycle Volatility, Uncertainty and Long-Run Growth. The Manchester School, 69, 534–552.

Lane, P. (2001). The New Open Economy Macroeconomics: A Survey. In: Journal of International Economics, 54, 235–266.

Leahy, M., Schich, S., Wehinger, G., Pelgrin, F., Thorgeirsson, T. (2001). Contributions of Financial Systems to Growth in OECD Countries. OECD Economics Department Working Papers, Paris, 280.

Levine, R., Loayza, N., Beck, T. (2000). Financial Intermediation and Growth: Causality and Causes. In: Journal of Monetary Economics, 46, 31–77.

Martin, P., Rogers, C. A. (2000). Long-Term Growth and Short-Term Economic Stability. In: European Economic Review, 44, 359–381.

Neusser, K., Kugler, M. (1998). Manufacturing Growth and Financial Development: Evidence from OECD Countries. In: The Review of Economics and Statistics, 638–646.

Obstfeld, M. (1995). International Capital Mobility in the 1990s. In: Kenen, P. (ed.). Understanding Interdependence: The Macroeconomics of the Open Economy. Princeton University Press, Princeton.

Obstfeld, M., Rogoff, K. (1996). Foundations of International Macroeconomics. MIT Press, Cambridge.

Pagano, M. (1993). Financial Markets and Growth: An Overview. In: European Economic Review, 37, 613–622.

Petersen, M. A., Rajan, R. G. (1995). The Effect of Credit Market Competition on Lending Relationships. In: Quarterly Journal of Economics, 110(12), 407–443.

Rajan, R. G., Zingales, L. (1999a). Politics, Law and Financial Development, Supplement No. 24 to the Government Inquiry on the International Competitiveness of the Swedish Financial Sector.

Rajan, R. G., Zingales, L. (1999b). Which Capitalism? Lessons from the East Asian Crisis. Mimeo.

Rajan, R. G., Zingales, L. (2001a). The Great Reversals: The Politics of Financial Development in the 20th Century. NBER Working Paper No. 8178.

Rajan, R. G., Zingales, L. (2001b). Financial Systems, Industrial Structure, and Growth. In: Oxford Review of Economic Policy, 17(4), 467–482.

Ramey, G., Ramey, V. R. (1995). Cross-Country Evidence on the Link between Volatility and Growth. In: American Economic Review, 85(5), 1138–1151.

Rodrik, D. (1998). Why Do More Open Economies Have Bigger Governments? In: Journal of Political Economy, 106, 997–1032.

Rousseau, P., Sylla, R. (2001). Financial Systems, Economic Growth, and Globalization. Vanderbilt University, Working Paper 01–W19.

Rousseau, P., Wachtel, P. (1998). Financial Intermediation and Economic Performance: Historical Evidence from Five Industrialized Countries. In: Journal of Money, Credit, and Banking, 30(4), 657–678.

Rousseau, P., Wachtel, P. (2000). Equity Markets and Growth: Cross-Country Evidence on Timing and Outcomes, 1980–1995. In: Journal of Business and Finance, 24, 1933–1957.

Sarno, L. (2001). Toward a New Paradigm in Open Economy Modeling: Where Do We Stand? Review Federal Reserve Bank of St. Louis, 83, May/June, 21–36.

Schwert, G. W. (1989). Why Does Stock Market Volatility Change over Time. In: Journal of Finance, 49(5), 1115–1153.

Senay, O. (1998). The Effects of Goods and Financial Market Integration on Macroeconomic Volatility. The Manchester School Supplement, 66, 39-61.

Shan, J. Z., Morris, A. G., Sun, F. (2001). Financial Development and Growth: An Egg-and-Chicken Problem? In: Review of International Economics, 9(3), 443–454.

Stiglitz, J. E. (1989). Financial Markets and Development. In: Oxford Review of Economic Policy, (5), 55–68.

Stock, J. H., Watson, M. W. (2002). Has the Business Cycle Changed and Why? Harvard University and Princeton University. Mimeo.

Sutherland, A. (1996). Financial Market Integration and Macroeconomic Volatility. In: Scandinavian Journal of Economics, 98(4), 521–539.

Wurgler, J. (2000). Financial Markets and the Allocation of Capital. In: Journal of Financial Economics, 58(1,2), 187–214.

A Financial Decelerator in Europe?
Evidence from Austria

1 Introduction

Benedikt Braumann[1]

The series of financial crises over the last decades has provided valuable lessons on the behavior of banks. It was found that financial liberalization, which has occurred in many parts of the world, is especially fraught with risks. Financial liberalization – like high inflation – is a major monetary shock. The reaction of the financial system to such a shock reveals important information about its general behavior. More importantly, this behavior can be shown to differ depending on the financial structure of a particular country.

This paper complements the literature on financial liberalization, which has so far been biased towards crisis episodes. It analyzes the case of Austria, where the odds for a financial crisis were strong. Like Sweden or Finland, Austria started out with a severely repressed financial system, and political influence was pervasive. Austria had a currency peg, and its firms relied to a much larger extent on bank financing than their Scandinavian counterparts. Shocks to the banking system could thus be expected to propagate more vigorously in Austria.

Yet no boom-bust cycle appeared, and the country managed a successful and smooth financial liberalization. In the end, Austria benefited strongly from the reforms. Apparently, the same shock – financial liberalization – elicited very different responses in the financial systems of Austria and Scandinavia. The Austrian experience is even more unusual in a wider context. In emerging markets, financial liberalization almost invariably led to financial crises.

This paper seeks out possible reasons of the Austrian success. Since financial liberalization is a complex process, several dimensions need to be analyzed. Some factors are linked to policy, others are linked to financial structure. The latter are given special attention in this paper, since they reveal information about the transmission mechanism of monetary shocks. It turns out that the large Austrian banking sector tends to dampen monetary shocks, through a system of endogenous buffers. There is thus evidence for a *financial decelerator*.

On the part of economic policymaking, three implications emerge from the study: First, in the comprehensive reforms of Austria, gradualism worked well. The slicing of reforms into manageable pieces avoided a cumulation of risk factors and the emergence of financial bubbles. The remaining symptoms of distress could be isolated and dealt with one at a time. Second, the sequencing broadly followed today's consensus view – even without the benefit of hindsight. And third, the cyclical potential of financial reforms was managed well. In Austria, financial reform was timed in a countercyclical manner, and other policy tools were used to offset and smooth over the cyclical effects. Liberalization coincided with episodes of weak demand, and regulations were tightened during upswings.

The paper proceeds as follows. Section 2 gives a brief outline of the main reform steps. Section 3 asks whether the Austrian experience was indeed successful compared to that of other countries. Then, section 4 discusses reasons for success linked to economic policy. Section 5 discusses potential

contributions from Austria's financial structure. Like other papers on this issue, this one follows a case-study approach on a broad range of variables. It seeks to raise economic issues and encourage further research.

2 Financial Liberalization in Austria – A Summary

Compared to developments in other countries, financial reform in Austria was late, lengthy and comprehensive. Austria's financial markets ranked among the most repressed in Europe until the late 1970s. The degree and nature of regulation were comparable to that in Scandinavia and many developing countries. In particular, the financial sector had to cope with entry barriers, branching restrictions, credit ceilings, interest controls, pervasive state ownership and tight controls of international capital movements. Table 1 gives an overview of the most important restrictions.

Table 1

The Most Important Financial Restrictions

- Opening new branches is subject to government approval.
- Savings banks and credit cooperatives are subject to regional constraints.
- Savings banks are not allowed to perform certain investment banking activities.
- Entry is subject to approval by bankers' association and government.
- Minimum deposit rates are set by government. Detailed structure of deposit and lending interest rates is fixed by banking cartel.
- Credit ceilings apply relative to deposit and credit growth.
- Capital flows are subject to approval by central bank.
- Public ownership of 60% of banking assets.
- Prohibition of advertising consumer loans.

Financial liberalization in Austria began with the abolition of branching restrictions in 1977, and ended with the privatization of the last major state-owned bank in 2000. A detailed survey of events and the changes in regulation is given by Braumann (2002). The liberalization process and its effects are summarized below. Table 2 then presents a timetable of the main regulatory reforms. Without undue simplification, the process of financial liberalization in Austria can be divided into nine distinct stages:

Stage 1: 1977-78. The liberalization of branching set off a branching boom, which was accompanied by a lending boom that led to overheating of the economy and a sharp deterioration of the current account.

Stage 2: 1979-81. High inflation led to a collapse of the inflexible interest rate cartel and to a de facto liberalization of interest rates.

Stage 3: 1980-86. Loan quality progressively deteriorated during the last stages of the lending boom. With government support, uncompetitive state-owned industries stepped up distress borrowing. A serious banking crisis was averted when the government bailed out the insolvent public enterprises in 1986 and assumed their debt service.

Stage 4: 1985-87. A reversal in the process of financial liberalization: In order to strengthen bank finances after the distress of the early 1980s, the government temporarily reestablished the interest rate cartel.

Stage 5: 1987-93. To ensure sound banking on a long-term basis, the authorities tightened prudential standards. Higher capital requirements dampened credit supply significantly.

Stage 6: 1988-91. The capital account was liberalized in anticipation of future EU membership. This led to significant capital inflows and an asset price boom, but not to exuberant lending.

Stage 7: 1995-2000. EU accession removed the last financial restrictions. Entry was freed, and the government privatized most state-owned banks. This set off a process of mergers and concentration.

Stage 8: 1995-2001. Privatizations and mergers upset the competitive equilibrium in the credit market. This led to intensified competition as banks fought for their positions. Fiscal adjustment allowed for a rapid expansion of private sector credit and crowding in of private demand.

Stage 9: 1995-2001. Banks discovered foreign currency loans as a device of competition. These low-interest loans rapidly increased their market share to 20%, making Austria the economy with the highest degree of currency substitution in Western Europe. The speculative element of foreign currency loans carries significant prudential risks.

Table 2

Main Liberalization Measures

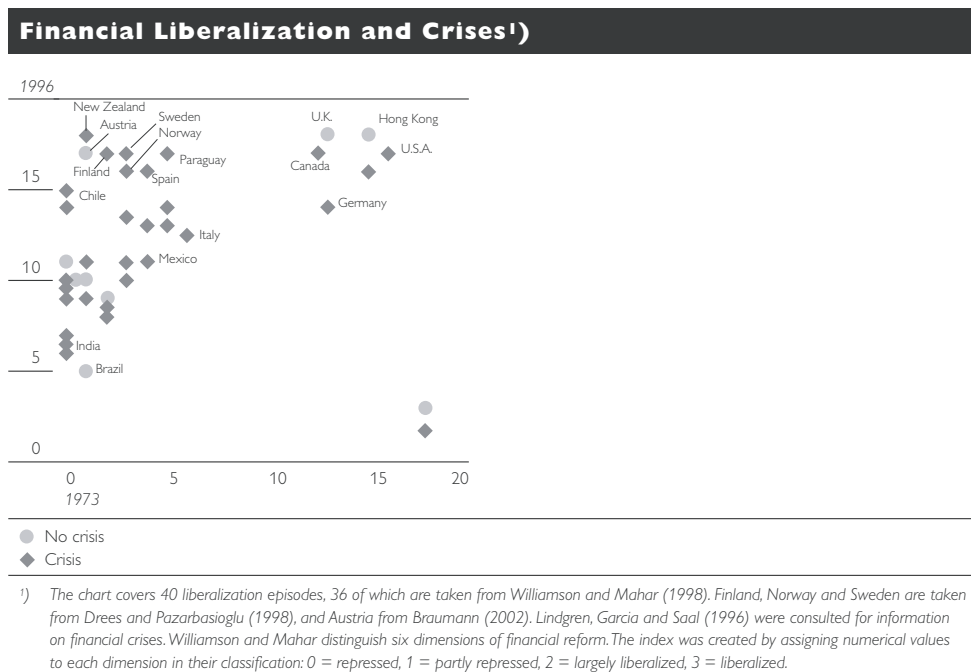|	
1977	Abolition of branching restrictions
1980	Liberalization of interest rates
1981	Abolition of credit controls
1985	Re-establishment of interest controls through interest rate cartel
1987	Prudential reforms; Capital requirements tightened; Comprehensive data reporting
1988–1991	Liberalization of the capital account
1993 approx.	Interest rate cartel expires
1994	Free entry
1992–2000	Privatization of state-owned banks

Source: Braumann (2002).

3   How Successful Was Austrian Financial Reform?

In their survey of financial liberalization and financial crises, Lindgren, Garcia and Saal (1996) draw a map of the world and markgray the countries that experienced financial crises over the last 20 years. Very few white spots remain, and most of them are due to a lack of data. However, Austria appears as a true exception to the worldwide pattern, an island of stability amid an ocean of financial crises. This section examines the first of two related questions: (1) Was Austria's financial liberalization really a success? The next section asks (2) If liberalization was a success, what were the reasons? In brief, answer to (1) is yes. The answer to (2) will be given in four propositions below. In part, the government followed a sensible sequencing of reforms, and timed reforms in a gradual and countercyclical manner. On the other side, Austria was fortunate to count on a competitive and agile private banking sector, which had a long-term business perspective. This financial sector developed endogenous buffers against shocks that tended to smooth fluctuations, even without government interference.

Chart 1

Financial Liberalization and Crises[1]

- ● No crisis
- ◆ Crisis

[1]   The chart covers 40 liberalization episodes, 36 of which are taken from Williamson and Mahar (1998). Finland, Norway and Sweden are taken from Drees and Pazarbasioglu (1998), and Austria from Braumann (2002). Lindgren, Garcia and Saal (1996) were consulted for information on financial crises. Williamson and Mahar distinguish six dimensions of financial reform. The index was created by assigning numerical values to each dimension in their classification: 0 = repressed, 1 = partly repressed, 2 = largely liberalized, 3 = liberalized.

Proposition 1: In contrast to many other countries, Austria accomplished financial liberalization at a low cost and reaped high benefits.

Financial liberalization has somewhat of a bad reputation. It has too often been associated with disruptive financial crises, especially when liberalization was profound. Chart 1 illustrates this observation. It combines the results of two large cross-country studies, a survey of financial liberalization by Williamson and Mahar (1998) and a survey of financial crises by Lindgren, Garcia and Saal (1996). The chart shows the change in liberalization between 1973 (horizontal axis), and 1996 (vertical axis). The index of liberalization ranges from 0 (financially most repressed) to 18 (most liberal). Liberalization is a movement up from the diagonal, and was most profound in countries clustering the north-western corner of the diagram. Diamonds denote financial crises, while circles denote smooth transitions. It is evident that financial liberalization is a risky business. Of 40 liberalizing countries in the sample, three quarters (29) experienced financial crises. Most of the remaining quarter deregulated little. This was either because they already had liberal financial systems (upper right) or because they chose to retain controls (lower left).

Austria thus represents the rare case of a country with sweeping financial reforms but no financial crisis. All other sweeping reformers in the upper left corner of chart 1 experienced a financial crisis during 1973-96. Spain suffered a crisis during the early 1980s, when banks holding 20% of deposits had to be rescued. New Zealand experienced serious difficulties in the late 1980s, as a quarter of all deposits were in danger. Norway, Finland and Sweden went through a classical boom-bust cycle around 1990, which has become a textbook example of financial crisis. Many more crises happened in emerging markets. The banking busts in Chile and Argentina in the early 1980s cost over a third of GDP. Paraguay and Mexico experienced systemic crises in the mid-1990s. The

Chart 2

Private Sector Credit over GDP

Source: IMF: International Financial Statistics.
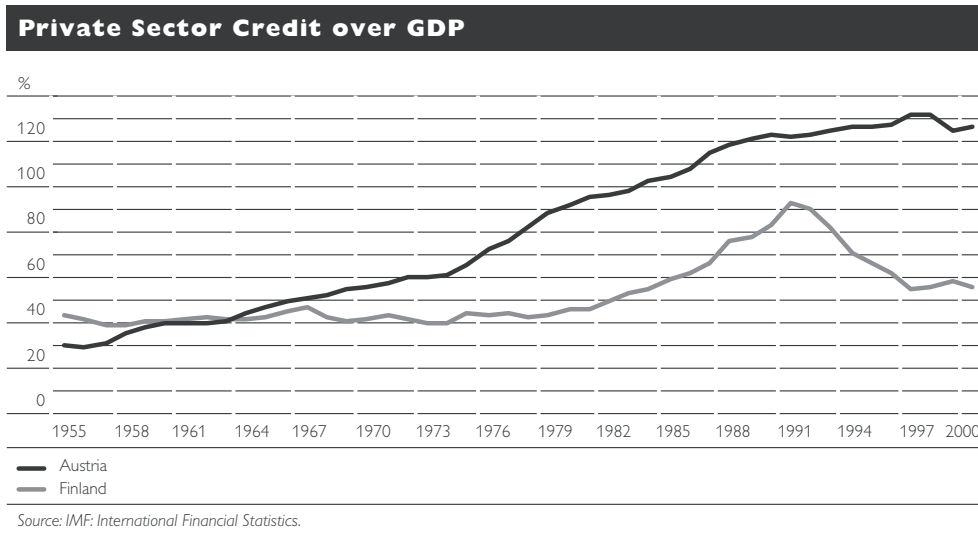
late 1990s saw crashes in Russia, Turkey and East Asia, which are not included in the chart.

Austria could thus have fared much worse. And apart from being spared a systemic financial crisis, Austria reaped tangible economic gains from financial liberalization. Financial markets have become deeper, more sophisticated and mature. Chart 2 shows a measure of financial deepening, the ratio of credit to the private sector to GDP. This ratio more than doubled from 52% to 106% between 1973 and 2001, which represents one of the largest increases world-wide. Only Malaysia had its ratio increase by more. Finland also experienced fast financial deepening after deregulation, but this was reversed in the crisis of the early 1990s. There, private sector credit rose from 45% of GDP in 1973 to 94% in 1991, but fell back to 57% in 2001.

Chart 3

Benefits and Costs of Financial Liberalization

Source: IMF: International Financial Statistics, Lindgren, Garcia and Saal (1996), Demirgüc-Kunt and Detragiache (1998), Frydl (1999), Williamson and Mahar (1998), Grubelnik (1999), OeNB.
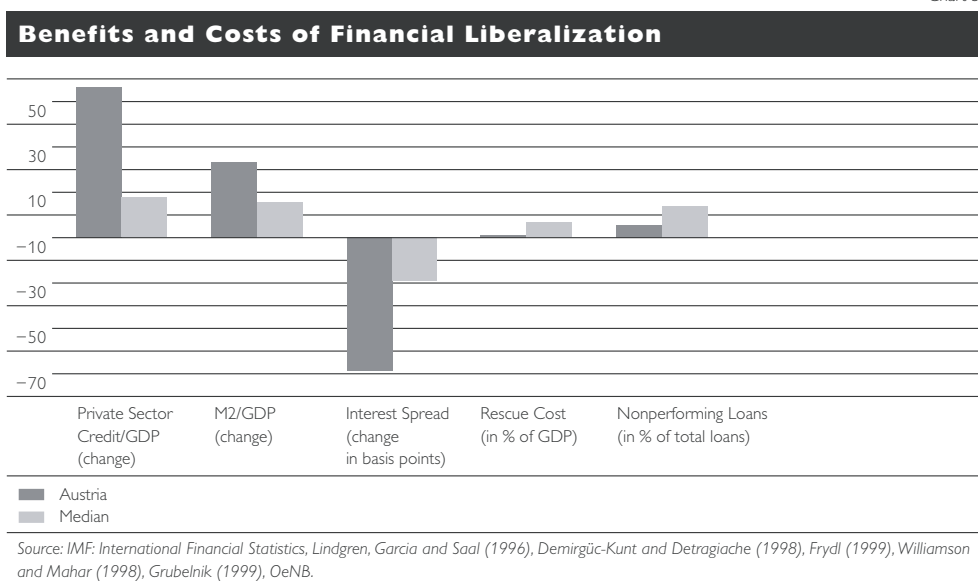
Chart 3 summarizes some key variables of financial health. It contrasts median values of all 40 sample countries to Austria. Between 1973 and 2000, the ratio of private sector credit to GDP grew 3.7 times faster in Austria than in the sample average. The ratio of M2 to GDP, another indicator of financial depth, expanded twice as fast as the average. The cost of intermediation can be gauged by the interest margin. The interest margin has always been relatively low in Austria, and financial liberalization reduced it further still. It declined by −0.6 percentage points in Austria, three times more than the sample average. Thus, Austria enjoys a rather efficient banking system today. The absence of a crisis also meant that Austria had a low ratio of nonperforming loans, and low fiscal rescue costs. Nonperforming loans peaked at 4.7% of total loans, compared to 13% on average. And bailouts were exceedingly rare. The government injected 0.8% of GDP of fresh capital into banks, compared to a sample average of 6.4% of GDP. These were tangible savings for the taxpayer.

4 Policy Measures to Smooth the Effects of Liberalization

Proposition 2: Austria largely followed the recommended sequencing of financial reforms. However, the fiscal sector lagged behind.

Much has been written about the proper sequencing of reforms.[1] Sequencing errors are often blamed for precipitating financial crises, as they may create incentives for excessive risk taking and moral hazard. According to conventional wisdom, macroeconomic stabilization, trade liberalization, privatization and prudential regulations should be in place before financial reform. Once this groundwork is laid, the authorities should first deregulate interest rates and credit controls, allow free entry and then liberalize the capital account (see table 3). Austria followed the conventional wisdom for an important part of reforms. However, the weakest link proved to be the fiscal sector. Fiscal adjustment and privatization were postponed for a long time and came very last in the process. Nevertheless, the sequencing of trade reforms, internal and external deregulation was correct and contributed importantly to the success of the project.

Austria's government incurred considerable risk when it widened the fiscal deficit in the years prior to reform. Adjustment was postponed until the late 1990s, and fiscal deficits exceeded 5% of GDP in 14 out of 20 years from 1975 to 1995. This led to a rapid build-up of public debt, which rose from 17% of GDP in 1975 to 68% in 1995. Eventually, tax increases brought the deficit back under control, and the budget recorded a slight surplus in 2001. Large fiscal deficits carry the risk of triggering a debt spiral or high inflation, which may lead to political unrest. This was the case in Chile, Argentina and Turkey, where financial reforms were aborted after an unsustainable fiscal stance had thrown the economy into disarray. Fortunately for Austria, high private savings absorbed public debt without causing inflationary pressures.

---

1   *For a recent survey, see Caprio et al. (2001).*

Table 3

Sequencing of Financial Liberalization	
Conventional Wisdom	Austria
1. Fiscal adjustment	1. Trade reforms
2. Trade reforms	2. Domestic financial liberalization
3. Prudential supervision	3. Prudential supervision
4. Privatization	4. External financial liberalization
5. Domestic financial liberalization	5. Privatization
6. External financial liberalization	6. Fiscal adjustment

Also against the conventional wisdom, privatization started late and remains incomplete. Large banks were privatized in the late 1990s, and the government retains a considerable stake in industry today. The Asian crisis and many other experiences worldwide warn against political influence in banking. The managers of Austrian public banks were similarly subject to political pressure, especially during the late 1970s and early 1980s. Large bank loans propped up loss-making state industries. However, a systemic crisis was averted when the government assumed the industrial debt in the mid-1980s, and ensured that obligations were met on time.

Overall, however, Austria followed textbook sequencing for an important part of reforms. This has certainly helped avoid perverse incentives and allowed agents to adapt to a more market-oriented environment over time. Large banks in particular were well prepared for account liberalization thanks to their privileged access to trading permits. Weak public finances and slow privatization were the soft spots of the reform process.
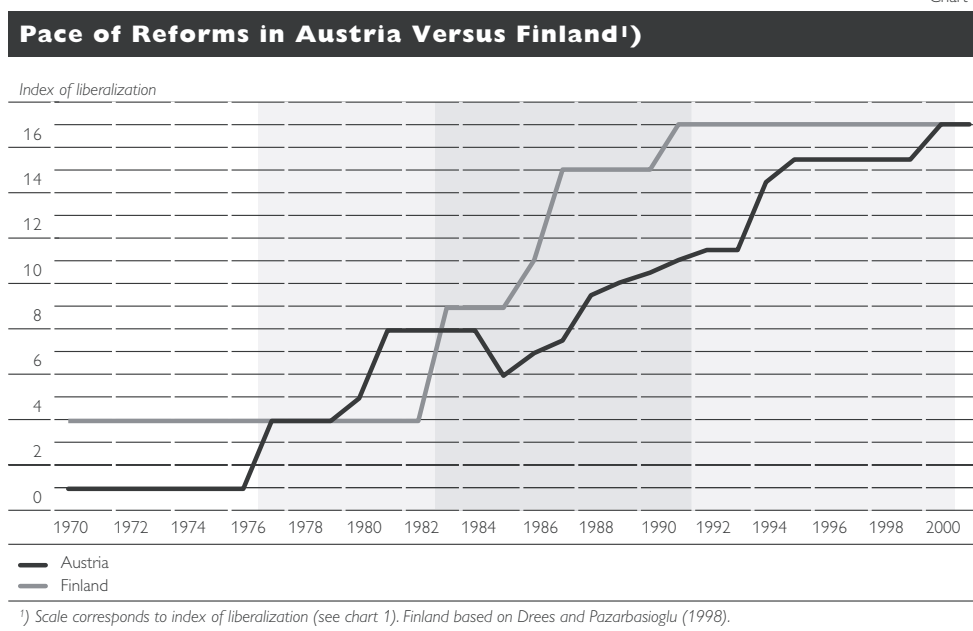
Proposition 3. Gradualism impeded the accumulation of distress symptoms and averted a general financial bubble. However, it also made reforms vulnerable to reversals.

It is apparent from chart 1 that Austria undertook comprehensive reforms. However, Austrian financial liberalization was exceedingly slow. Chart 4 compares the speed of reforms in Austria and Finland.[1] The slope of the line indicates the speed of reforms, the dark shaded area denotes their duration in Finland, the light shaded area their duration in Austria. Reforms in Finland were completed after nine years. In contrast, financial liberalization in Austria took a total of 23 years (1977-2000). This is slow even in a wider international context. For instance, Williamson and Mahar find that a group of "gradual reformers" took between 10 and 15 years to liberalize completely.[2] "Fast reformers," which include Latin American and Scandinavian countries, Turkey and South Africa, took between 3 and 10 years.

[1] *Information on Finland is based on Drees and Pazarbasioglu (1998). The numerical interpretation corresponds to the classification of Williamson and Mahar (see chart 1).*

[2] *Japan, Israel and Sri Lanka took 15 years, France, Thailand, Indonesia, Malaysia and the Philippines around 10 years.*

Chart 4

Pace of Reforms in Austria Versus Finland[1])

Index of liberalization

— Austria
— Finland

[1]) Scale corresponds to index of liberalization (see chart 1). Finland based on Drees and Pazarbasioglu (1998).
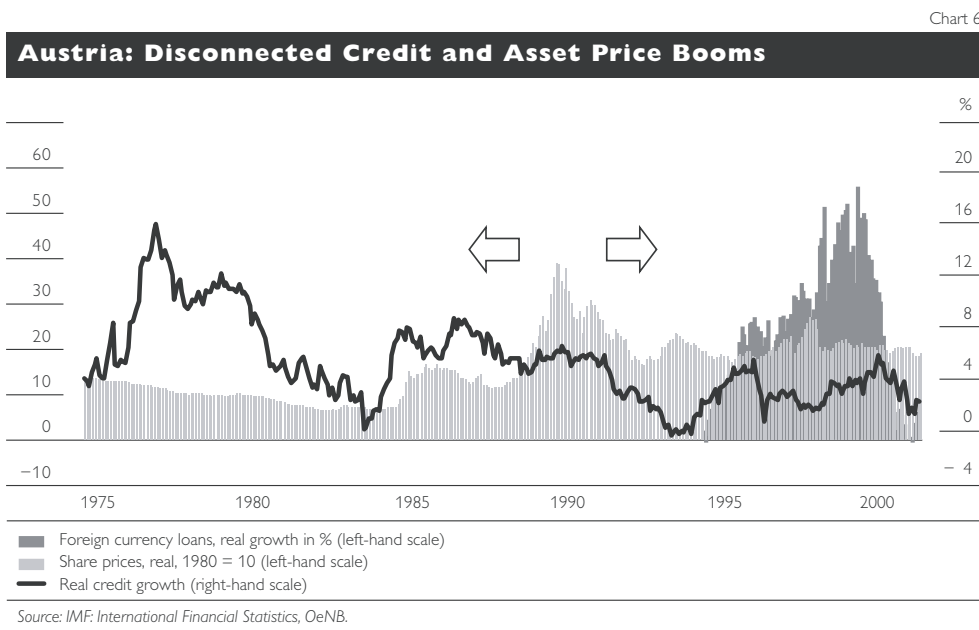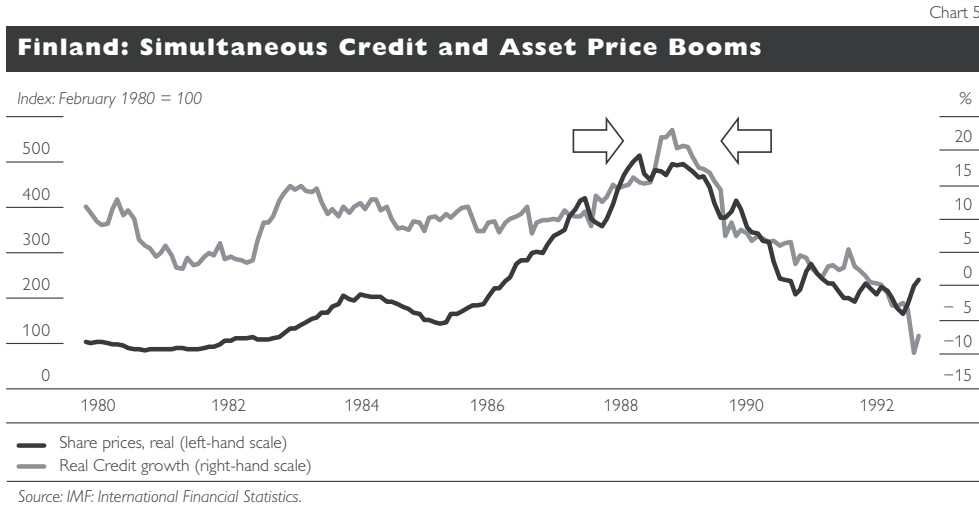
Gradualism can reduce the risk of systemic financial crises. Braumann (2002) shows that all common symptoms of financial distress were present in Austria at one time or another: lending booms, asset price bubbles, politically directed lending, decapitalization of banks, foreign currency exposure and excessive competition. However, none of these symptoms got completely out of control. The gradualist and finely sequenced approach of reforms kept the disruptions sufficiently far apart so that they could not combine into a full-blown crisis.

Chart 5 illustrates the experience of Finland, which is quite typical for the pitfalls of financial liberalization. A lending boom got underway shortly after restrictions on the domestic market were removed in 1982–86. The capital account was opened in 1986, and capital inflows inflated asset prices. This accelerated the lending boom, as collateral increased in value, making credit less expensive to the borrower. The credit and asset price bubble burst in 1990–92 and triggered a sharp recession.
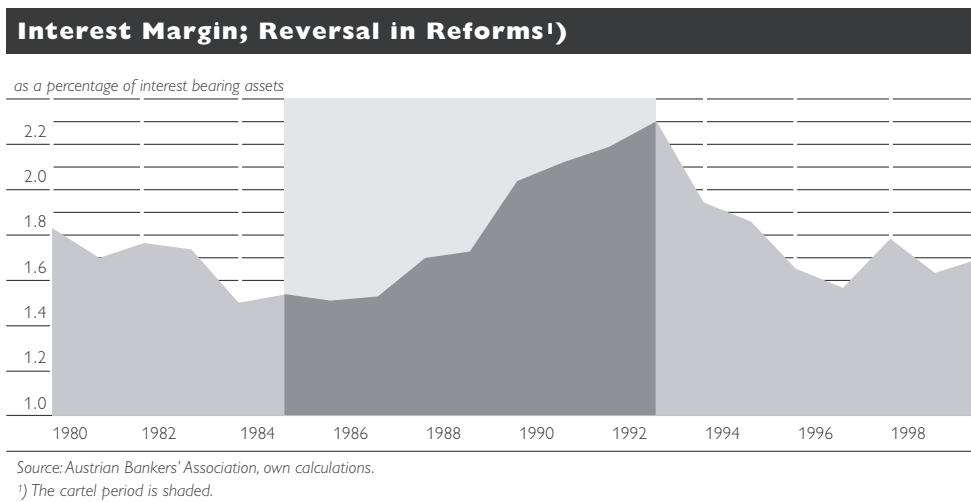
Chart 6 illustrates the Austrian case. The same imbalances as in Finland were present, as were a lending boom, an asset price bubble and a large foreign currency exposure. However, these phenomena were separated in time and could not combine into a vicious circle and a general financial bubble. Domestic reforms set off a lending boom in the late 1970s, but no capital inflows occurred, since capital controls remained in place. The lending boom was starved of substance and brought under control by high real interest rates and the imposition of credit ceilings. When the capital account was liberalized in the late 1980s, capital inflows led to a surge in asset prices. However, credit growth remained modest because (1) prudential regulations were tightened at the same time, forcing banks to restrict lending (2) diversified collateral with a low share of real estate weakened the effect of asset prices on credit supply, and (3) high real interest rates dampened credit demand. Finally, a boom in foreign

currency lending was balanced by a large fiscal adjustment in the late 1990s. The three episodes were separated by almost ten years each.

Chart 5

Finland: Simultaneous Credit and Asset Price Booms

Index: February 1980 = 100

Share prices, real (left-hand scale)
Real Credit growth (right-hand scale)

Source: IMF: International Financial Statistics.

Chart 6

Austria: Disconnected Credit and Asset Price Booms

Foreign currency loans, real growth in % (left-hand scale)
Share prices, real, 1980 = 10 (left-hand scale)
Real credit growth (right-hand scale)

Source: IMF: International Financial Statistics, OeNB.

The downside of gradualism was a vulnerability to reversals. This happened during the mid-1980s, as the bad financial health of the banking sector alarmed government and banks alike. As a reaction, the authorities resuscitated the cartel on interest rates, in order to quell "exaggerated and ruinous" competition and restore profits. The collusive arrangement resulted in an immediate improvement of interest margins, profits and capital ratios. As chart 7 shows, interest margins increased from 1.5% to 2.5% between 1985 and 1993, suggesting that competition was in fact curbed. The capital-asset ration began to recover rapidly, increasing by 8% in 1986 and 18% in 1987. The recapitalization of banks was thus primarily financed by borrowers, who had to pay higher lending rates. Thus, the recovery of the banking sector was bought at the

Chart 7

Interest Margin; Reversal in Reforms[1])

as a percentage of interest bearing assets

```
2.2
2.0
1.8
1.6
1.4
1.2
1.0
    1980    1982    1984    1986    1988    1990    1992    1994    1996    1998
```

Source: Austrian Bankers' Association, own calculations.
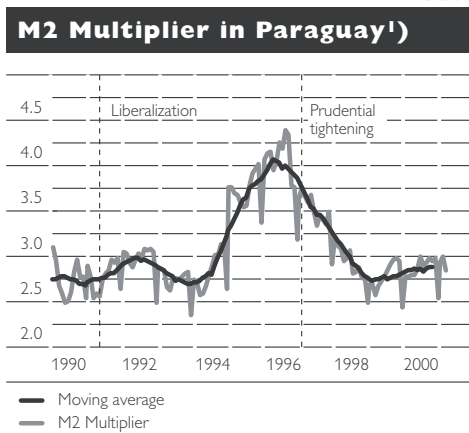[1]) The cartel period is shaded.

expense of a temporary reversal in the process of financial liberalization. This was the price that Austria paid for gradualism.

Proposition 4: The cyclical effects of financial liberalization were balanced by tight monetary, fiscal and prudential policies. The timing of this tightening was highly fortunate if not always intentional.

Monetary policy, fiscal policy and financial reform can all be regarded as cyclical tools of the government. In Austria, these tools frequently canceled out each other's cyclical effects. Financial liberalization has effects that are similar to expansionary monetary policy, while prudential tightening resembles contractionary monetary policy. The main difference is that monetary changes take place in the private-sector monetary aggregate (i.e. money created by commercial banks), and not in the monetary base. Thus, financial liberalization and prudential regulation often translate into changes of the money multiplier. This
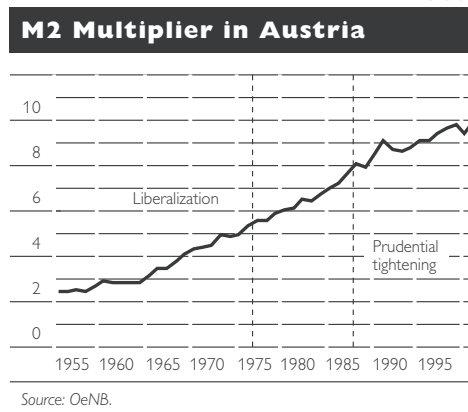
Chart 8

M2 Multiplier in Paraguay[1])

```
4.5          Liberalization    Prudential
                               tightening
4.0
3.5
3.0
2.5
2.0
    1990    1992    1994    1996    1998    2000
```

— Moving average
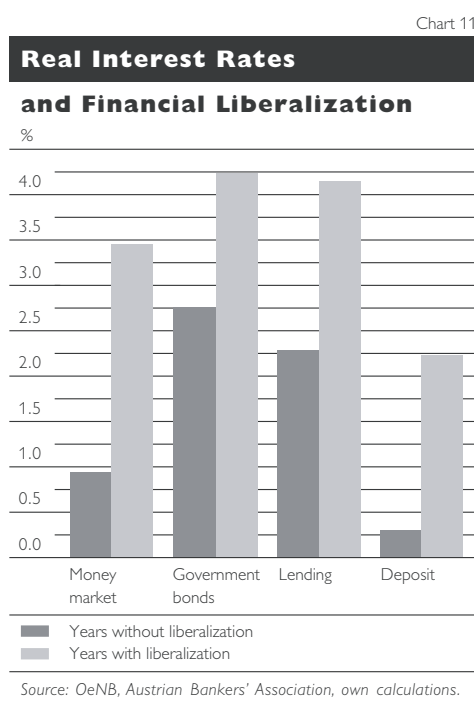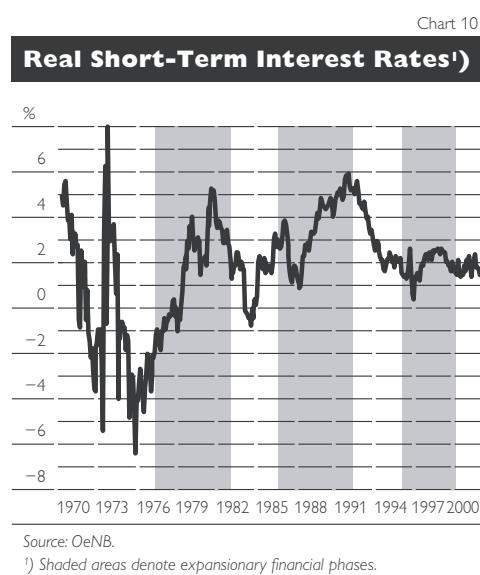— M2 Multiplier

Source: Central Bank of Paraguay.
[1]) The multiplier is defined here as the ratio of M2 or M3 to currency (M0). The banking crisis has led to a significant reduction of the multiplier in Guarani money, as measured by M2. The M3 multiplier remained constant because of an increasing dollarization. More recently, the M2 multiplier resumed a modest growth, while the M3 multiplier grew vigorously.

Chart 9

M2 Multiplier in Austria

```
10
8
6              Liberalization
4                                  Prudential
                                   tightening
2
0
    1955  1960  1965  1970  1975  1980  1985  1990  1995
```

Source: OeNB.

relation is illustrated nicely by Paraguay's financial liberalization during the 1990s. By contrast, Austria's M2 multiplier increased continuously throughout time, without any visible turning points. This is remarkable, because it is not due to the absence of destabilizing financial shocks. Both economic policy and internal buffers of the banking system played together to offset the shocks. We first turn to economic policy.

Monetary policy was used actively to offset the expansionary impulses of financial reform. Chart 10 and 11 show that real interest rates were higher on average during years of financial reform (1977–81, 1986–92, 1994, 2000) than otherwise after 1970. Real money market rates, which the central bank controls most directly, increased by 250 basis points during periods of reform. This propagated to other parts of the financial system, e.g. to government bond yields, lending and deposit rates. To some extent, monetary policy was imposed from abroad, as Austria followed German policies due to its peg to the Deutsche mark. However, the timing of international monetary restrictions was quite fortunate as well.

Chart 10

Real Short-Term Interest Rates¹)

Source: OeNB.
¹) Shaded areas denote expansionary financial phases.

Chart 11

Real Interest Rates

and Financial Liberalization

Years without liberalization
Years with liberalization

Source: OeNB, Austrian Bankers' Association, own calculations.

The final expansionary phase of financial liberalization was marked by a boom in foreign currency lending during the late 1990s. During this period, restrictive fiscal policy kept the banking sector in check. In order to fulfill the criteria of the *Stability and Growth Pact,* the government carried out a fiscal adjustment of 6½% of GDP between 1995 and 2001, and reduced bank lending by almost 30% in real terms. This created room to increase private lending without destabilizing overall credit growth.

Finally, prudential reform exerted important countercyclical effects. The first wave of financial reforms had led to intense competition and a dangerous decline in bank profitability and capital endowments. The government tried to arrest the deterioration in the mid-1980s first by reestablishing the interest rate

cartel, then by tightening prudential standards, in particular by raising capital requirements. Both measures had a restrictive effect on bank lending, making credit more expensive and interest margins wider. This reduced the expansionary impulse from opening the capital account and surging capital inflows.

Chart 12

Reforms and the Business Cycle

Source: OeNB, changes in liberalization index of chart 1.
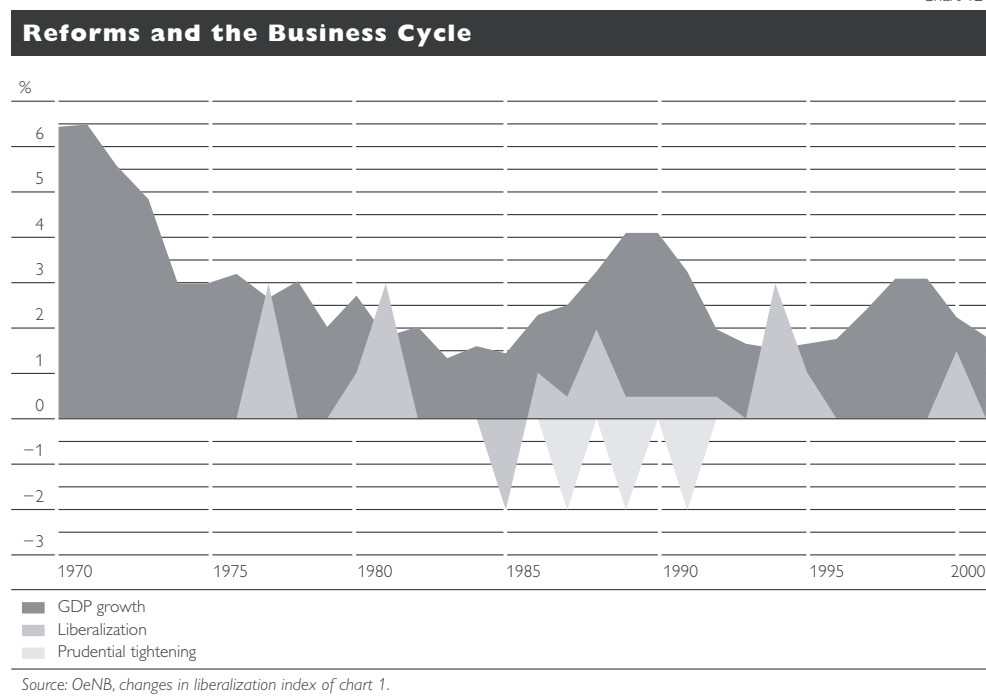
Whether intentionally or not, shocks to economic policy often canceled each other out, or were tuned appropriately to economic growth. Chart 13 shows that liberalization episodes mostly occurred in times of economic weakness. The chart combines GDP growth rates (three-year moving averages) with changes in the liberalization index described above. Domestic financial liberalization was carried out when the economic environment was weakened by OPEC oil price shocks, an international recession. Privatization and the surge in foreign currency loans took place in a period of fiscal adjustment and sluggish growth during the late 1990s. Capital flows were liberalized during an economic upswing, but their effect was offset by a parallel tightening of prudential standards. In sum, Austria was fortunate to liberalize at the right time, and to contain the effects of liberalization with the right cyclical policies.

5 Structural Buffers in the Financial System

Proposition 5: Many Austrian banks have a long time horizon and buffer cyclical shocks. Their "financial decelerator" dampens economic fluctuations. While unusual, this fits in a hump-shaped relation between the financial accelerator and the banking system size in Europe.

Monetary shocks – such as financial liberalization – wield their effects on the real economy through the so-called *transmission mechanism.* The large number of financial crises has recently led to a closer examination of transmission channels worldwide, as exemplified by Kashyap and Stein (1995), Ehrmann et al. (2001)

and Angeloni et al. (2001). In many countries, it was found that the financial sector magnifies monetary shocks and business cycles in general. This behavior has been termed *financial accelerator.*
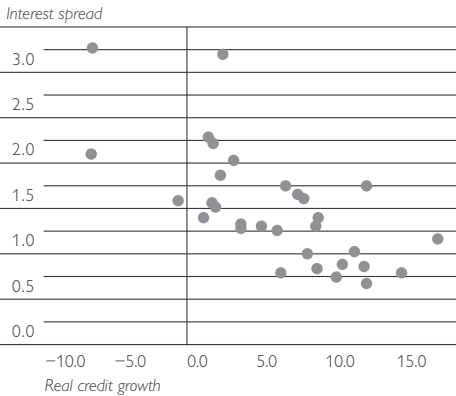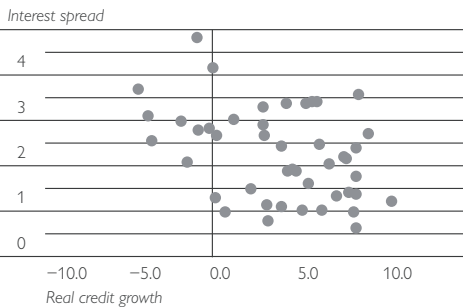
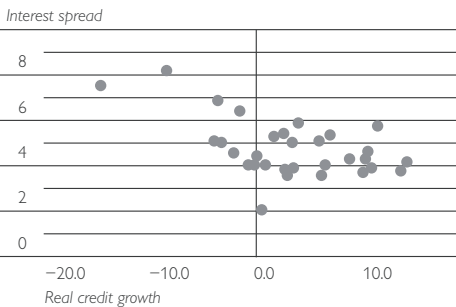Chart 13

Interest Margins and the Business Cycle
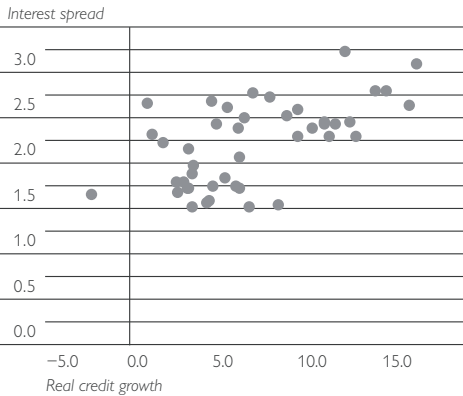
Source: Austrian Bankers' Association, OeNB, IMF: International Financial Statistics.

The magnitude of the financial accelerator depends on the microeconomic structure of the transmission mechanism. Three channels have been identified: (1) The *interest rate channel* of monetary transmission works with perfect capital markets and regardless of banks. Higher interest rates lead to intertemporal substitution of investment and consumption, and to a decline in aggregate demand. This channel is familiar from the textbook IS-LM model, and turns out to be symmetric across most OECD countries, see Angeloni et al. (2001). It can thus not account for the observed cross-country differences. (2) A second mechanism is the *balance sheet channel,* which is based on changes in the value of collateral, especially real estate. This effect is likely to be small in Austria, since collateral is well diversified and real estate plays a minor role. Austrian banks prefer deposits, bonds and inventory stocks for collateral. (3) The *bank lending channel,* which transforms interest rate changes into changes in credit supply. Increases in the central bank rate lead to a decline in deposits, as deposit rates are slow to adjust. Unless banks have alternative sources of liquidity, the drain in deposits forces them to curtail credit. This channel was found to operate strongly among small and medium-sized banks in the U.S.A. It could be expected to operate even more strongly in Europe, where the banking sector

is much larger in relation to GDP, and especially in Austria. A priori, Austria would therefore seem vulnerable to a large financial accelerator.

However, this is not the case. Empirically, a financial accelerator would imply a negative relationship between credit growth and interest margins. This pattern is explained by the risk-taking behavior of banks, and by a need to maximize profits over the short term.[1]) Upturns generate optimistic expectations about future returns, and banks eagerly extend loans. Competition heats up, interest margins narrow and enhance credit demand further. During downturns, banks lose interest income as loans become nonperforming. They widen interest margins and curtail credit supply, and shift their portfolio towards low-risk assets. Short-term profit maximization thus tends to amplify the business cycle.

Chart 13 shows the relation between real credit growth and the interest margin for several countries. Interest margins are calculated as the difference between lending and deposit rates in annual IFS data for 1955-2000. Canada, the U.S.A. and Sweden represent the general case of a financial accelerator. The plots show a negative correlation between credit growth and interest margins. In contrast, Austria shows a positive correlation: the interest margin widens when credit growth is high. This is rare evidence for a financial *decelerator,* i.e. for bank behavior that dampens the business cycle.
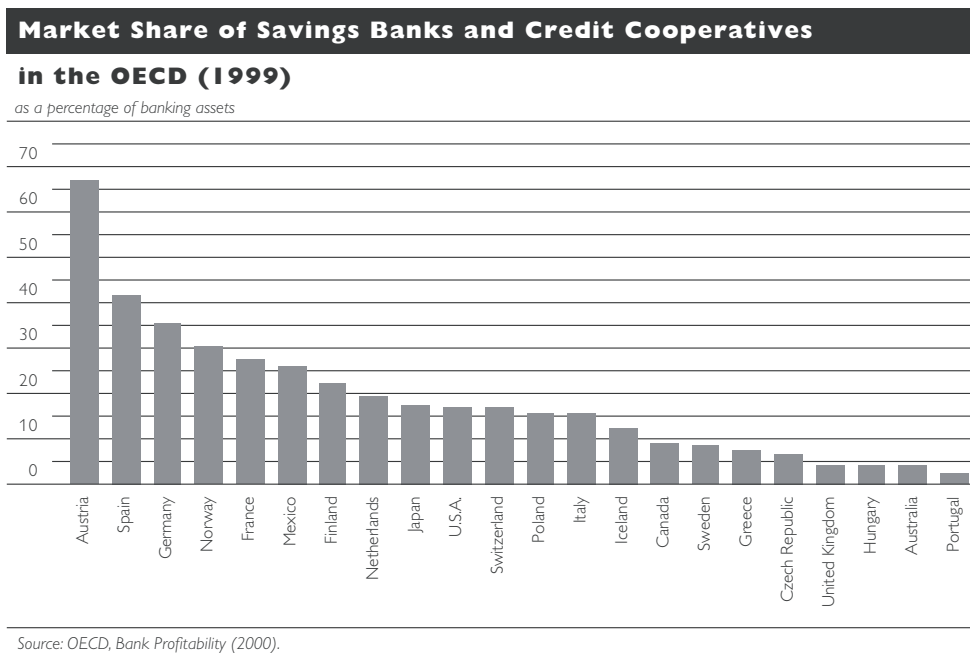
Several factors may contribute to a weakening of the bank lending channel in Austria. First, state influence in banking was pervasive until recently. Up to the mid-1990s, more than half of all banking assets were controlled by the state. Second, Austrian banks were organized in a cartel, at least until the entry into the EU in 1995. Cartelization implies rigidities in interest rates and may diminish the transmission of interest rate signals. Third, most banks are part of networks that perform an internal liquidity management. Savings banks and cooperatives can borrow liquidity from a large central institution whenever they face a shortage of deposits. Thus, a central element of the bank lending channel is invalidated.

Finally, the cyclical behavior of Austrian banks can be related to their ownership structure and its incentives for bank managers. Austria is the country with the highest share of nonprofit banks in the OECD. Savings banks and cooperatives comprise two thirds of the Austrian banking sector. These banks are not primarily interested in short-term profits. Their goal is to ensure a stable value of their assets over the long run, and to provide constant credit to their clients, who may be their owners. Close relationship banking has the additional advantage of reducing asymmetric information. Borrowers receive loans with very long maturities. Managers have thus an incentive to pursue a strategy of intertemporal smoothing, as described by Allen and Gale (2000): they accumulate reserves during good times, and liquidate them during bad times. This is consistent with widening interest margins when credit demand is high, and narrowing them in a downturn. Banks relax credit conditions and help borrowers stay afloat, at the price of a temporary decline in profits. By pursuing intertemporal smoothing, banks provide an implicit insurance to borrowers and help dampen the business cycle.

---

1   See BIS (2001), p. 139–160.

These observations confirm the findings of Kaufmann (2001) and Valderrama (2001) on the absence of a bank lending channel in Austria. Set in a wider context of industrialized countries, Austria has one of the largest banking sectors relative to GDP and one of the smallest financial accelerators. A larger banking sector therefore does not necessarily mean more financial instability. Maybe the opposite is true. Chart 15 illustrates the findings of a series of ECB papers surveyed in Angeloni et al. (2001). The papers attempted to test the proposition that the bank lending channel is stronger in Europe than in the U.S.A., due to its bank-dominated financial system. Surprisingly, the bank lending channel was found to be weaker in most European countries. In addition, there seems to be evidence that the bank lending channel *disappears* when the ratio of private sector credit to GDP grows very large.

Chart 14

Market Share of Savings Banks and Credit Cooperatives

in the OECD (1999)

as a percentage of banking assets

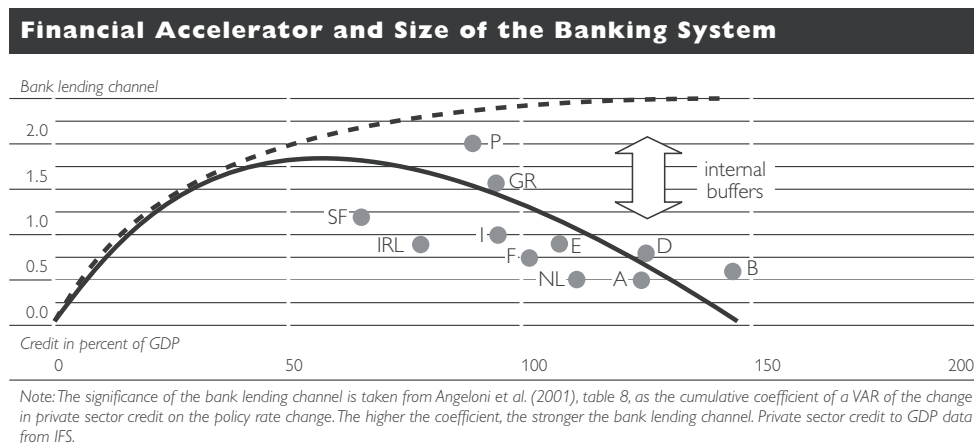Source: OECD, Bank Profitability (2000).

Thus, the relation between size of the banking system and the financial accelerator seems to be a hump-shaped curve like in chart 15. Countries with small and poorly developed financial systems (on the left) would have small financial accelerators. As the banking sector grows relative to the economy, the bank lending channel becomes more significant, and the financial accelerator increases. However, beyond a certain threshold the banking system grows only if it develops strategies to overcome information asymmetries. Two such strategies are long-term relationship banking and liquidity networks. Both encourage intertemporal smoothing and lead to the development of internal buffers that diminish the effects of shocks. The financial accelerator may thus decline at the right end of the scale, and eventually vanish. A large banking system is more diversified and contains a larger number of internal buffers. This may be a comforting thought for the ECB.

Conclusions

The series of financial crises over the last decades has provided valuable lessons on the behavior of banks. An especially interesting monetary shock is financial liberalization: it has occurred many parts of the world and implies a severe test on the financial system. Depending on their financial structure, countries exhibited completely different reactions to financial liberalization.

This paper seeks to complement the literature on financial liberalization, which was biased towards crisis episodes. It analyzes the case of Austria, where the odds for a financial crisis were strong. Like Sweden or Finland, Austria started out with a severely repressed financial system, and political influence was even pervasive. Austria had also had a currency peg, and its firms relied to large extent on bank financing. Shocks to the banking system could thus be expected to have important real effects in Austria.

Chart 15

Financial Accelerator and Size of the Banking System

Note: The significance of the bank lending channel is taken from Angeloni et al. (2001), table 8, as the cumulative coefficient of a VAR of the change in private sector credit on the policy rate change. The higher the coefficient, the stronger the bank lending channel. Private sector credit to GDP data from IFS.

Yet no boom-bust cycle happened, and the country managed a successful and smooth financial liberalization. This paper presents two sets of explanations for this unusual experience, one linked to policy, the other linked to financial structure. The latter deserves special attention, since it yields information about the transmission mechanism of monetary shocks. It turns out that the large Austrian banking sector does not magnify monetary shocks, but seems to contain a system of built-in buffers to dampen them. There is thus evidence for a *financial decelerator*. Set in a wider European context, a picture emerges whereby countries with a very large banking sector, such as Austria, are less susceptible to financial instability. This may be good news for monetary policy in Europe, where the banking sector in general is much larger than in other parts of the world.

On the side of economic policy, three implications emerge from the study: First, in comprehensive reforms, gradualism works well. The slicing of reforms into manageable pieces avoided a cumulation of risk factors and the emergence of financial bubbles. The remaining symptoms of distress could be isolated and dealt with one at a time. Second, sequencing followed broadly today's consensus view – albeit without the benefit of hindsight. And third, the cyclical potential

of financial reforms was managed well. In Austria, financial reform was timed in a countercyclical manner, and other policy tools were used to offset and smooth some of its cyclical effects. Liberalization coincided with episodes of weak demand, and regulations were tightened during upswings.

References

Allen, F., Gale, D. (2000). Comparing Financial Systems. Cambridge, MIT Press.

Angeloni, I. et al. (2001). Monetary Transmission in the Euro Area: Where Do We Stand? In: ECB Working Paper 114.

Berger, A., Hunter, W., Timme, S. (1993). The Efficiency of Financial Institutions: A Review and Preview of Research Past, Present and Future. In: Journal of Banking and Finance, 17, 221–249.

BIS (2001). Annual Report, Section VII: Cycles and the Financial System. Basel, BIS.

Brandner, P. (1991). Liberalisierung der österreichischen Devisenbestimmungen. In: WIFO-Monatsberichte 11/91.

Braumann, B. (2002). Financial Liberalization. In: Austria. OeNB mimeo.

Caprio, G., Honohan, P., Stiglitz, J. (eds.) (2001). Financial Liberalization: How Far, How Fast? Cambridge UP.

Demirgüc-Kunt, A., Detragiache, E. (1998). Financial Liberalization and Financial Fragility. In: IMF Working Paper WP/98/83.

Drees, B., Pazarbasioglu, C. (1998). The Nordic Banking Crisis. In: IMF Occasional Paper 161.

Ehrmann, M. et al. (2001). Financial Systems and the Role of Banks in Monetary Policy Transmission in the Euro Area. In: ECB Working Paper 105.

Frydl, E. (1999). The Length and Cost of Banking Crises. In: IMF Working Paper WP/99/30.

Glauninger, V., Magerl, Ch., Mooslechner, P. (2001). Österreichs Bankensystem im Umbruch: Neue Fragen auf Alte Antworten? In: Fuchs, W., Horvath, O. (eds.). Wirtschaftsstandort Österreich. Von der Theorie zur Praxis. Vienna, Bundesministerium für Wirtschaft.

Grubelnik, K. (1998). Die Rote Krake. Wien, Molden.

Hviding, K. (2000). Challenges of European Financial Integration: the Case of Austria. In: IMF Staff Country Report 00/124.

Kashyap, A., Stein, J. (1995). The Impact of Monetary Policy on Bank Balance Sheets. Carnegie Rochester Conference Series on Public Policy, Vol. 42, 151-195.

Kaufmann, S. (2001). Asymmetries in Bank Lending Behavior. Austria During the 1990s. In: ECB Working Paper 97.

Kernbauer, H. (1991). Währungspolitik in der Zwischenkriegszeit. Vienna.

Lindgren, C.-J., Garcia, G., Saal, M. (1996). Bank Soundness and Macroeconomic Policy. Washington, D.C. IMF.

Mishkin, F. (2000). The Economics of Money, Banking and Financial Markets, Boston, Adison, Wesley, Longman.

Schulz, G. (1997). Entwicklungen und Perspektiven des österreichischen Devisenrechts. Wien, Peter Lang Verlag.

Shy, O. (1997). Industrial Organization, Boston, MIT Press.

Valderrama, M. (2001). Credit Channel and Investment Behavior in Austria. A Micro-Econometric Approach. In: ECB Working Paper 108.

Williamson, J., Mahar, M. (1998). A Survey of Financial Liberalization. Princeton, Princeton UP.

Wyplosz, C. (2001). Financial Restraints in Postwar Europe. In: Caprio, G. et al. (eds.) (2001), Financial Liberalization. Cambridge, UK, Cambridge UP.

Banking Structure and Investment in Austria: Some Empirical Evidence[1])

Maria Teresa
Valderrama[2])

I Introduction

At the heart of the financial accelerator theory of investment is the idea that due to capital market imperfections the investment decision of the firm is not independent of its financing decision. In this framework financial development, and therefore the cost and availability of external finance, is important for growth due to its effect on investment.[3]) In the same fashion, the institutional framework plays an important role by the way in which it reduces financial constraints that would otherwise restrict investment. However, no clear answers have been attained about whether a market-based or a bank-based financial system is better at promoting growth, neither empirically nor theoretically.[4]) One of the reasons often mentioned is that despite the shortcomings of bank-based systems, there are advantages due mainly to the possibility of establishing long-term lending relationships[5]), which help overcome asymmetric information, moral hazard, and adverse selection problems.

The goal of this paper is to test first, whether the existence of a house bank influences investment after controlling for other relevant variables such as internal funds, size and age; and second, whether given that there is a house bank, the characteristics of the house bank influence the firm's investment. Theoretical and empirical studies about lending relationships (Petersen, 1994, 1995; Ongena and Smith, 1998; Houston and James, 1999; Boot, 2000) have mainly found that the presence of a house bank does not decrease the sensitivity of investment to the cost of capital but allows firms to be less dependent on their internal funds.

The structure of the banking system has also been found to be relevant for investment. The interest on the effect of the banking structure on investment has risen due to increasing merger and acquisition activities and the consolidation of the banking system. Some authors (Berger and Udell, 1994, 1998; Berger et al., 2001; Bonaccorsi and Dell'Ariccia, 2000; Bonaccorsi and Gobbi, 2000; Cole and Walraven, 1998) argue that market concentration and market consolidation are detrimental to lending relationships since large banks or banks with large market power will have less interest in building narrow lending relationships, especially with small or young firms. Thus, there is an implicit fear that developments in the banking structure will curtail the existence of lending relationships.

This paper partly confirms these results. The presence of a house bank does not reduce the cost of capital for all firms, but depending on the size of the firm, it may help reduce the financial constraints the firm faces. Contrary to expect-

---

3   See Tsuru (2000) for a survey of the literature on the relationship between financial constraints and firm-level investment.

4   Levine (2002).

5   This is the existence of a house bank.

ations, however, small and young firms benefit more from having a large bank as their house bank.

The paper is organized as follows: the next section motivates the empirical specification. Section 3 describes the data and indicators used in the empirical part. Section 4 presents the results of the estimations. The summary and conclusions follow.

2 Theoretical Framework

In a world of perfect capital markets, the investment decision of a firm would be independent of its financing decision.[1] However, in a world with asymmetric information, moral hazard, agency costs, adverse selection, and other market imperfections, internal and external funds are not perfect substitutes and there is no perfect substitution between bank loans and other sources of funds. Thus, if capital market imperfections exist, both the supply and the cost of external funds a firm faces will depend not only on the financial structure of the firm but also on other characteristics that determine the firm's access to external funds. These may include among others size, age, and the existence of a narrow lending relationship with a bank.

Under these circumstances, investment of firms with limited access to capital markets will depend more on internal funds and will be more sensitive to the user cost of capital, because the premium on external funds will grow faster for firms that are financially constrained. In addition, financial intermediaries may ration some creditors out of the market.[2] In other words, if a firm has limited access to the capital market due to market imperfections and does not have sufficient internal funds to finance its desired level of investment, it will be financially constrained and will have to cut down on investment.

For the same reason the financial system in which a firm operates may have an influence on the amount of investment, depending on whether capital market imperfections are overcome more easily or not. In the literature of finance for growth, no clear answers to the question of which financial structure is better at promoting growth have been found yet.[3] One of the reasons often mentioned is that despite the problems that arise in a bank-based system, this system has advantages over the market-based system due mainly to the possibility of establishing long-term lending relationships, which help overcome many asymmetric information, moral hazard and adverse selection problems existent in imperfect markets.[4]

In order to find empirical evidence for the effects of financial factors on investment, a number of studies have tested whether the sensitivity of invest-

---

1   That is, if the Modigliani-Miller theorem holds.

2   See Stiglitz and Weiss (1981), Hubbard (1994), Cecchetti (2000), and Oliner and Rudebusch (1996).

3   "The results are robust to an extensive array of sensitivity analyses that employ different measures of financial structure, alternative statistical procedures, and different datasets. The conclusions are also not altered when looking at extremes: countries with very well developed banks but poorly developed markets do not perform notably differently from those with very well developed markets but poorly developed banks, or than those with more balanced financial systems: cross-country comparisons do not suggest that distinguishing between bank-based and market-based is analytically useful for understanding the process of economic growth." (Levine, 2002).

4   Another reason is the intertemporal risk sharing practiced by banks with tight lending relationships.

ment of firms with different access to capital markets reacts differently to its determinants, such as the user cost of capital and the availability of internal funds.[1]

The influence of the financial system on investment has usually been investigated by looking at the role that lending relationships play on facilitating investment. The study of the relationship between firms and banks has been done either by studying the investment behavior of the firms as proposed here, or by looking at the credit demand of these firms. Research on the credit channel and financial accelerator theory has concentrated on the effect of financial constraints on investment (Bernanke et al., 1994; Bond et al., 1994, 1997). Most of the literature that has merged bank and firm data has related the credit demand of (or bank lending to) nonfinancial firms with the characteristics of banks (Berger, 1995 to 2001; Bonaccorsi et al., 2000).[2] Only few studies, such as Gibson (1995, 1997) have included bank characteristics on the investment function equation.[3]

The advantage of using microeconomic data in studies of finance for growth is that this type of data is more appropriate to circumvent the problem of causality because firm performance is unlikely to shape an economy's financial development. One obvious advantage of using firm-level data is that the structure of the financial system can be considered exogenous with respect to the performance of individual firms, especially if data on small and medium-sized firms are used.

The starting point is an investment demand specification derived from the optimization problem of the firm. Assuming a Cobb-Douglas production function the desired capital stock of firm i at time t, K_{it}^* will be given by the first-order conditions for profit-maximizing behavior, which is that the marginal productivity of capital should be equal to its marginal cost. The marginal cost is taken here to be the user cost of capital. Thus, rewriting:[4]

$$K_{it}^* = \alpha_i \frac{S_{it}}{UC_{it}} \tag{1}$$

---

1   For literature surveys, see Hubbard (1994), Mojon et al. (2000). For studies done for Austria, see Valderrama (2001), Wesche (2000) and Kaufmann (2001).

2   This is not trivial, since there is an identification problem that has to be solved. Assuming that there is always some degree of credit rationing, credit demand is not observed, only credit supply.

3   Gibson finds that the health of the banks was an important determinant of investment demand for bank-dependent firms in Japan.

4   For detailed derivations of the profit maximizing behavior, see for example Bond et al. (1997) and Mairesse et al. (1999).

Where S_{it} is output or net sales, UC_{it} is the firm-specific user cost of capital[1]) and α_i the share of capital in the production function. Writing the logarithms of K_{it}^{*}[2]) and S_{it}[3]) with small letters, using ρ for the log of the user cost of capital and relaxing the constraints of a proportional reaction of capital to output and to the user cost, equation (1) can be linearized by:

$$k_{it}^{*} = \alpha_i + \beta s_{it} - \gamma \rho_{it} \tag{2}$$

The accelerator specification for investment demand is obtained by taking first differences and using the following expression as an approximation for investment $\Delta k_{it} \approx I_{it}/K_{it-1} - \delta$ (with I_{it} and δ denoting investment and depreciation, respectively).

Since the adjustment to the desired capital stock is not instantaneous, this equation is generally expressed as an autoregressive distributed lag specification, where η_{it} denotes a firm specific constant and v_{it} represents the error term:

$$I_{it}/K_{it-1} = \lambda(I_{it-1}/K_{it-2}) + \sum_{j=0}^{T} \beta_j \Delta s_{it-j} - \sum_{h=0}^{T} \gamma_h \Delta \rho_{it-h} + \eta_{it} + v_t \tag{3}$$

Due to asymmetric information and agency costs, lenders will charge a higher premium to firms for which they have less information. This premium will be lower the larger the net worth of the firm is, since net worth can be used as collateral. Under this view, the cost of external funds will depend on the financial structure of the firm, and the demand for investment will depend as well on the financial position of the firm. This empirical specification is based on the financial accelerator theory of investment, which states that weak balance sheets can amplify adverse shocks on firm investment.[4])

In this framework, the investment demand equation in (3) is augmented by factors that account for the net worth of the firm, such as the ratio of liquid assets to capital. Thus, an augmented investment demand equation can be written as:

$$I_{it}/K_{it-1} = \lambda(I_{it-1}/K_{it-2}) + \sum_{j=0}^{T} \beta_j \Delta s_{it-j} - \sum_{h=0}^{T} \gamma_h \Delta \rho_{it-h}$$

$$+ \sum_{m=0}^{T} \omega_m C_{it-m}/p_{t-m}^{I} K_{t-1-m} + \eta_{it} + v_t \tag{4}$$

where C_{it} represents the cash level and p_t^I represents the economy-wide price deflator of gross investment. The hypothesis is that if finance matters, then the availability of internal funds will affect not only investment, but also the total

---

1   The firm-specific user cost of capital is defined as: $UC_{it} = (p_t^I/P_t)(r_{it} - \Delta p_{t+1}^I/p_t^I + \delta)$where r_{it} is the apparent interest rate, which is defined as the ratio of interest and similar charges to gross debt, p_t^I is the economy wide price deflator for gross investment, P_t is the GDP deflator, and δ is the economic depreciation rate. This definition of the user cost of capital includes three additive elements: the opportunity cost of capital given by the apparent interest rate, a forward-looking inflation component given by the term $\Delta p_{t+1}^I/p_t^I$ and economic depreciation.
2   The stock of capital was calculated using the perpetual inventory method with a depreciation rate of 10%.
3   Output is defined as net sales.
4   Bernanke and Gertler (1995).

effect of the user cost of capital on investment. Additionally, to allow for heterogeneity and control for different access to external funds, the sample is split according to age and size.

The Role of Lending Relationships

Lending relationships are important for investment because through long-standing relationships both lenders and borrowers may overcome some of the asymmetric information problems found in imperfect capital markets. Thus, firms that otherwise would be financially constrained, such as small or young firms, may have greater access to external funds by building a lending relationship. The certainty that the firm will have access to funds even in bad times may come at a cost for the firm. First, the bank may apply monopolistic pricing on the loans,[1] and second, strong dependence on a bank which may not have enough funds may curtail investment for the client firms.[2]

The investigation of the importance of lending relationships for investment is done by including a dummy variable that accounts for the presence of a house bank[3] in the regression. Other studies have usually found that bank lending relationships have a positive effect not on the price but rather on the availability of external funds and also that this benefits especially young and small firms.[4]

Some studies have also dealt with the characteristics of the lender. Petersen and Rajan (1995) for example find that "borrowing from banks with large market power facilitates inter-temporal sharing of rent surplus and hence increases the value of a single relationship"[5] at the same time there is also evidence that small banks are better at providing finance to small firms, because they are better at collecting and processing "soft information."[6] Other reasons why the characteristics of the lender may matter for the borrower are that when the house bank suffers a liquidity shock like in Detragiache et al. (1997) it will cut financing, forcing a bank-dependent firm with low internal funds to seek expensive outside financing or to cut investment.[7] Kashyap and Stein (1997) and Cecchetti (2000) argue that smaller banks, for example, are more likely to reduce lending in case of a monetary contraction.

Thus, once it is determined whether a firm has a house bank, cross sectional variations are investigated by splitting the sample according to house bank groups. Banks are categorized according to their size as explained in the next section.

---

1   This is the so-called hold-up problem. See Ongena and Smith (1998), and Dell'Ariccia and Marquez (2001).

2   See Ongena and Smith (1998) for a more detailed account of all possible effects of lending relationships on firms.

3   This is explained below.

4   Petersen and Rajan (1994, 1995), Ongena and Smith, (1998), Houston and James (1999), Boot (2000).

5   Ongena and Smith (1998).

6   Petersen and Rajan (1994), Berger et al. (2002).

7   Gibson (1995, 1997), Kang and Stulz (2000), Ongena et al. (2000), and Tsuru (2000) argue, for example, that relationship lending increases the effects of a banking crisis on the economy.

3 Data and Indicators

The aim of this project is to investigate the effect of the banking structure and lending relationship on the investment function of nonfinancial firms simultaneously. This can be done by taking advantage of the wealth of information of the OeNB database by merging the information from 1) balance sheets and income balances of nonfinancial firms, 2) the data obtained by the Major Loans Register database and 3) information about banking structure obtained from the banking statistics of the OeNB. By doing this, it is possible to study how characteristics of the lender, such as size, influence the investment behavior of the borrower.[1]

The Oesterreichische Nationalbank collects data on balance sheets and income statements of Austrian firms in the course of its refinancing activities. To check the solvency of nonfinancial enterprises involved in the collateralization of monetary policy operations, the OeNB asks for annual accounts. These annual accounts are submitted to the OeNB by the enterprises themselves or by commercial banks doing business with the enterprises in question. Consolidated financial statements are collected in exceptional cases only.[2]

The database contains annual data for the years 1979 to 2000, which provides 42,870 observations. Although from 1987 more than 2,000 firms a year have submitted financial statements, the time series dimension is comparatively small for most firms, e.g. only 88 firms were observed over the whole sample period and 3,959 firms appear only once in the data.

After having cleaned the database (removing observations with negative values of sales, total assets, the stock of capital, total debt and the number of employees), removing outliers[3] and selecting a sample with firms present for at least five years in a row, only 13,703 observations for the years 1990 to 2000 remain.

Due to the special structure of the source material, the OeNB's sample is not a statistical sample, and there is a bias in the database. Commercial banks usually present collateral from companies that they expect will satisfy the OeNB's solvency requirements. Sound enterprises are thus overrepresented in the sample. Moreover, the bias becomes more severe when only those firms are regarded for which longer time series exist, since these are comparatively large firms.

Additionally, another OeNB database with data starting in 1990 is used to construct a proxy for the existence of a house bank. In the Major Loans Register, the OeNB collects monthly data from banks that give credit to firms for more than EUR 350,000. As part of the information collected, the OeNB calculates the largest share on total loans of the firm from one single bank.

Usually, lending relationships are proxied by the duration of the lending relationship.[4] However, due to the short time span of this database it is not

---

1 The data from the balance sheet and income balances of firms are available since 1979. The data from the 'Großkreditevidenz' are available since 1990 and the data from the banking statistics of the OeNB are available since 1990.

2 The individual data are strictly confidential and have to be aggregated for any publication in order to comply with data secrecy legislation.

3 It was done by excluding data, which exceeded five times the interval between quartiles from the median.

4 Conigliani et al. (1997), Berlin and Mester (1998), Ongena and Smith (1998), and Boot (2000).

possible to construct such an indicator. There is no information either about the kind of services, besides loans, the bank provides to the firm. Thus, the indicator of the existence of a house bank was constructed in the following way: the share of the bank with the largest share of total loans of the firm is taken from the Major Loans Register. If during the years the firm is represented in the sample the name of bank with the largest share is always the same and this share is larger than 45%, this firm is categorized as having a house bank. If the name of the bank with the largest share changes during the period under study, or if the bank's share of total loans of the firm is under 45%, the firm is considered to have no narrow lending relationship with any bank.[1]) Thus, the indicator of a "house bank" enters the regression as an interactive dummy variable. The reason to use this indicator to measure lending relationships is that given the large number of banks per inhabitant in Austria and the strong competition in this sector, a high share of a single bank in total debt could be taken as an indicator of a narrow lending relationship. If this share is maintained over several years, there is reason to believe that the firm has a close relationship with this bank. Using this classification scheme, 59.2% of firms in the sample have a house bank and 50.8% of the banks in the sample are house banks for at least one firm in the sample used.

Because the interest here lies in the effect that bank size has on investment, the sample of banks is split according to its assets. Three groups of banks are formed: large banks, medium-sized banks and small banks. Large banks are banks with assets of more than EUR 24.1 million, while assets of small banks are less than EUR 3.2 million. According to this split, 44.1% of the observations corresponding to firms with a house bank in the sample correspond to a large house bank, 30.1% to a medium-sized bank, and 25.8% to a small bank.[2])

Tables 1a to 1d show some descriptive statistics of the sample used in this study. The mean of the investment ratio is 9.66% for the whole sample. As expected, large firms show the highest investment ratio (10.29%) and small firms invest the least (7.31%), while there are no significant differences in the investment ratio of young and old firms.[3]) Since we are interested in the effects of the existence of a house bank on investment, we split the sample according to the indicator of a house bank described above. It is interesting to see that the investment ratio of firms that do not have a house bank is larger for all groups except for small firms. Since the second part of our investigation analyzes the effects of bank characteristics on investment, we split the sample again according to the size of the bank. We found the following pattern: When the house bank is a large bank, the investment ratio is always lower, except for young firms. When the house bank is medium-sized, the investment ratio is always larger. If the house bank is a small bank, the investment ratio is always smaller except in the case of small firms.

The mean of the user cost of capital for the whole sample shown in table 1c is 11.76%. This value is much larger for small (12.28%) and young (11.9%)

---

1   *Since firms used in the sample should be present for at least five consecutive years, the shortest lending relationship measured will be five years.*

2   *Data for merged banks are calculated backwards as data for one single bank.*

3   *Small firms are firms with less than 55 employees, while young firms are those established in the last ten years.*

firms and slightly lower for large and old firms (11.62% and 11.72%, respectively). The existence of a house bank increases slightly the mean of the user cost of capital for the whole sample as well as for old and small firms (11.77% and 12.32%, respectively).[1]) Since the second part of our study deals with the effect that the bank's characteristics have on investment, we look again at the differences in user cost of capital splitting the sample according to the house bank's characteristics. According to the size of the bank, the following pattern is found: When the house bank is large, the average user cost of capital is the lowest except for young and small firms, while when the house bank is small the average user cost of capital is the highest, except for large firms.

The mean of the liquid assets ratio is 44.7% for the whole sample. According to expectations, this ratio is smaller for large firms (43.5%) than for small firms (49%) and smaller for old firms (43.9%) than for young firms (47.8%). Taking into account whether the firm has a house bank gives the following picture: the liquidity ratio of firms without a house bank tends to be slightly lower or equal to that of the whole sample and to that of firms which have a house bank. Depending on the size of the house bank, the following pattern is found: firms whose house bank is considered a large bank show a higher average of liquid assets ratio than firms with medium-sized or small banks. The exception is the case of young firms, which show the highest liquid assets ratio when the house bank is classified as small.

4 Estimation and Results

The estimation of the investment function was done using two-step Arellano-Bond-GMM-type estimators, which control for biases due to unobserved firm-specific effects and lagged endogenous variables.[2]) The estimations were done using first differences of the logarithm to remove the firm-specific effects η_{it}, and time dummies were included to control for exogenous shocks in the data. Several estimations that are not presented here were carried out to determine the number of lags of the dependent variables. All lagged levels are used as instrumental variables. Due to the nature of the investment function, all variables are treated as predetermined variables. The validity of the instruments was tested with a Sargan test of overidentifying restrictions and tests of serial correlation in the residuals.

First we analyze whether the presence of a house bank makes a difference for the whole sample and then for different groups of firms. In the second part we investigate the effects that splitting banks according to their size has on the investment function of the whole sample of firms and then again for groups of firms.

The tests show that the investment equation is well specified, with the expected signs and mostly significant coefficients for firms with a house bank, whereas for the group of firms without a house bank most coefficients are

---

1   *This is consistent with the idea that banks use their monopolistic pricing power in these lending relationships, but when firms are young they do not use it so that they can establish a long-standing relationship that will reap benefits in the future. On the other hand, large firms may have a better bargaining position with banks and therefore banks cannot use their monopolistic power fully.*

2   *Arellano and Bond (1991).*

insignificant, except for the group of small firms. Surprisingly, the coefficient for net sales for firms with a house bank is in most cases positive and significant, although the value is relatively low compared to similar studies done for other countries. Thus, in general investment seems to be well specified with this model.

Summary Table

Long-Run Elasticities

	Coefficient all	Coefficient young	Coefficient old	Coefficient small	Coefficient large
Growth in net sales					
No house bank	0.002	0.072*	−0.001	−0.009*	0.037
All house banks	0.010	0.032	0.016	0.018**	0.029
Large house bank	0.103*	−0.028	0.085*	0.026*	0.059*
Medium-sized house bank	0.058*	0.086*	0.066*	0.044*	0.089*
Small house bank	−0.019	−0.012	−0.009	−0.031*	0.028*
Change in user cost of capital					
No house bank	−0.121*	0.044	−0.126*	−0.176*	−0.085
All house banks	−0.063	−0.128*	−0.071	−0.069*	−0.058
Large house bank	−0.091*	−0.181*	−0.032	−0.160*	−0.105*
Medium-sized house bank	−0.002	0.054*	−0.041	−0.189*	−0.050*
Small house bank	−0.150*	−0.349*	−0.088*	0.002	−0.203*
Liquidity Ratio					
No house bank	0.194*	0.125*	0.166*	0.058*	0.204*
All house banks	0.222*	0.181*	0.224*	0.147*	0.163*
Large house bank	0.093*	0.176*	0.117*	0.083*	0.105*
Medium-sized house bank	0.215*	0.177*	0.201*	0.184*	0.200*
Small house bank	0.193*	0.224*	0.175*	0.259*	0.124*

*Note: * Indicates significance at the 95% level. ** Indicates significante at the 90% level.*

Effect of the House Bank on Groups of Firms

As the summary table shows, the total long-term elasticity of the user cost of capital is –12.1% for firms without a house bank and –6.3% for firms with a house bank.[1]) However, in the latter case the coefficient is insignificant. In general, this elasticity is lower for firms with a house bank except for young firms, but this coefficient is often insignificant. In the case of small firms the long-run elasticity of the user cost of capital is significantly lower for firms with a house bank (–6.9% instead of –17.6% for firms without a house bank). Although no strong conclusions can be made about the effect of lending relationships on the sensitivity of investment to the user cost of capital, it seems that as it is predicted by the theory, small firms benefit the most by establishing long-term relationships with a bank.

As is usually found in this type of study, the liquid assets ratio is positive and always significant. Contrary to expectations, however, the long-run elasticity of the liquid assets ratio is higher for all groups of firms, except for large firms, when the firm has a house bank. Also contrary to expectations, the lowest long-run elasticity of the liquidity ratio is shown by small firms, while the highest is shown by old firms.

Most theoretical and empirical studies on lending relationships have found that the effect of lending relationships for firms was to increase both the

---

1   Detailed results are presented in tables 2 to 5 in the annex.

availability of external funds as well as the cost of those funds. In the Austrian case, on the contrary, firms with a house bank seem to be more dependent on internal funds than firms which do not have a house bank. However, contrary to expectations, the sensitivity of investment to changes in the user cost of capital decreases when the firm has lending relationships or this variable becomes insignificant.

Effect of the Size of the House Bank on Groups of Firms

According to theoretical and empirical results of previous studies, it is expected that small firms whose house bank is a large bank will not benefit from this lending relationship because of the inability or willingness of large banks to invest in firms in which asymmetric information is large. In contrast, when the house bank is small, small firms should show lower sensitivities of investment to both the user cost of capital and to the liquidity ratio. In this section, we test this hypothesis for the Austrian case.

With respect to the sensitivity of investment to the user cost of capital, the results of these regressions show that for the different groups of firms, having a small bank as a house bank comes at a cost. If the lack of significance of this variable in the investment function can be interpreted as the firm not reacting to changes in the user cost of capital, then small firms do seem to benefit from having a small bank. However, most other groups of firms show lower sensitivities to the user cost of capital when the house bank is a large bank. The exception is large firms, which benefit most when their house bank is a medium-sized bank. For old firms, it seems that the user cost of capital is not an important determinant of the investment decision since this coefficient is insignificant most of the time. Due to the frequency of insignificant coefficients, however, it is, difficult to draw strong conclusions about the effect of the size of the bank on the sensitivity of investment to the user cost of capital.

The analysis of the sensitivity of investment to the liquidity ratio allows a clearer picture of the effects of different banks. In all cases, the long-run elasticity of the liquidity ratio is lower when the house bank is a large bank. This is particularly surprising in the case of small firms. The sensitivity of investment to the liquidity ratio falls from 25.9% when the house bank is small to only 8.3% when the house bank is large. Another surprising result is that for large firms it does not seem to matter very much whether the house bank is large or small, reflecting perhaps the negotiating power a large firm can have over its house bank.

5 Summary and Conclusions

Due to capital market imperfections the investment decision of the firm is not independent of its financing. Thus, the financial position of a firm and the financial system in which this firm operates will partly determine the investment outcome and will therefore influence growth.

The study here goes beyond establishing whether financial variables are important determinants of investment and examines the role that lending relationships play in investment. The results confirm that financial variables, in this case the liquid-assets-to-capital-ratio, are an important determinant of investment, even more important than the user cost of capital.

The investigation of the role of lending relationships yielded some puzzling results. First, it is not clear that all firms benefit from having a house bank. The effect of a house bank on investment depends on the type of firm but also on the type of house bank. In general, firms seem to benefit most when the house bank is large measured by its assets. However, as has been often found in this kind of study, firms benefit mostly by depending less on their liquid assets than on a lower elasticity of the user cost of capital.

These results contradict some of the findings for the U.S.A., as for example that small banks are better house banks to small firms. The opposite is true for Austria: small banks have a negative effect on the investment of young and small firms and a positive effect on old and large firms while, surprisingly, young and small firms benefit more from having a house bank that is large.

References

Arellano, M., Bond, S. R. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. In: Review of Economic Studies, 58, 277—297.

Berger, A. N., Goldberg, L. G., White, L. J. (2001). The Effects of Dynamic Changes in Bank Competition on the Supply of Small Business Credit. In: Board of Governors of the Federal Reserve System Working Paper.

Berger, A. N., Udell, G. F. (1994). Did Risk-Based Capital Allocate Bank Credit and Cause a 'Credit Crunch' in the United States? In: Journal of Money, Credit, and Banking, 26 (August), 585—628.

Berger, A. N., Udell, G. F. (1998). The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle. In: Journal of Banking and Finance, 22, 613—674.

Berger, A. N., Miller, N., Petersen, M. A., Rajan, R. G., Stein, J. C. (2002). Does Function Follow Organizational Form? Evidence From the Lending Practices of Large and Small Banks. In: NBER Working Paper No. 8752.

Berlin, M., Mester, L. J. (1998). On the Profitability and Cost of Relationship Lending. In: Journal of Banking and Finance, 22, 873—897.

Bernanke, B. S., Gertler, M. (1995). Inside the Black Box: The Credit Channel of Monetary Policy Transmission. In: NBER Working Paper No. 5146.

Bernanke, B. S., Gertler, M., Gilchrist, S. (1994). The Financial Accelerator and the Flight to Quality. In: Review of Economics and Statistics, 78, February, 1—15.

Bonaccorsi di Patti, E., Dell'Ariccia, G. (2000). Bank Competition and Firm Creation. In: Bank of Italy Working Paper.

Bonaccorsi di Patti, E., Gobbi, G. (2000). The Effects of Bank Consolidation on Small Business Lending: Evidence from Market and Firm Data. In: Bank of Italy Working Paper.

Bond, S., Meghir, C. (1994). Financial Constraints and Company Investment. In: Fiscal Studies, Vol. 15, No. 2, 1—18.

Bond, S., Elston, J., Mairesse, J., Mulkay, B. (1997). Financial Factors and Investment in Belgium, France, Germany and the UK: A Comparison Using Company Panel Data. In: NBER Working Paper No. 5900.

Boot, A. W. A. (2000). Relationship Banking: What Do We Know? In: Journal of Financial Intermediation, 9, 7—25.

Cecchetti, S. G. (1995). Distinguishing Theories of the Monetary Transmission Mechanism, FRB of St. Louis Economic Review, 77, 83—97.

Cecchetti, S. G. (2000). Legal Structure, Financial Structure, and the Monetary Policy Transmission Mechanism in the Monetary Transmission Process: Recent Developments and Lessons for Europe. Deutsche Bundesbank, Palgrave.

Cole, R. A. (1998). The Importance of Relationships to the Availability of Credit. In: Journal of Banking and Finance, 22, 959–977.

Cole, R. A., Walraven, N. (1998). Banking Consolidation and the Availability of Credit to Small Business. In: Federal Reserve Board Working Paper.

Conigliani, C., Ferri, G., Generale, A. (1997). The Impact of Bank-Firm Relations on the Propagation of Monetary Policy Squeezes: An Empirical Assessment for Italy. In: Quarterly Review/Banca Nazionale del Lavoro, 50 (202), September, 271–299.

Dell'Ariccia, G., Marquez, R. (2001). Flight to Quality or to Captivity? Information and Credit Allocation. In: IMF Working Paper No. 01/20.

Detragiache, E., Demirgüç-Kunt, A. (1997). The Determinants of Banking Crises: Evidence from Industrial and Developing Countries. In: World Bank Working Paper No. 1828.

Frühwirth-Schnatter, S., Kaufmann S. (2001). Asymmetric Transmission of Monetary Policy Through Bank Lending. Evidence from Austrian Bank Balance Sheet Data. In: Focus on Austria 3–4, Oesterreichische Nationalbank, Vienna.

Gibson, M. S. (1995). Can Bank Health Affect Investment? Evidence from Japan. In: Journal of Business 68, 281–308.

Gibson, M. S. (1997). More Evidence on the Link between Bank Health and Investment in Japan. In: Journal of Japanese International Economics 11, 29–49.

Houston, J., James, C. M. (1999). Do Relationships Have Limits? Banking Relationships, Financial Constraints and Investment, Working Paper, University of Florida.

Hubbard, R. G. (1994). Is there a "Credit Channel" for Monetary Policy? In: NBER Working Paper No. 4977.

Hubbard, R. G, Kuttner, K., Palia, D. N. (2002). Are there Bank Effects in Borrower Cost of Funds? Evidence from a Matched Sample of Borrowers and Banks. In: Journal of Business, Vol. 75, No. 4.

Kang, J.-K., Stulz, R. (2000). Do Banking Shocks Affect Borrowing Firm Performance? An Analysis of the Japanese Experience. In: Journal of Business, V73, n1, 1–23.

Kashyap, A. K., Stein, J. C. (1995). The Impact of Monetary Policy on Bank Balance Sheets. In: Carnegie-Rochester Conference Series on Public Policy 42, 151–195.

Kashyap, A. K., Stein, J. C. (1997). Monetary Policy and Bank Lending. In: Mankiw, N. Gregory (ed.). Monetary Policy, Chicago, University of Chicago Press, 221–256.

Kashyap, A. K., Stein, J. C. (2000). What do a Million Bank Observations Have to Say About the Transmission of Monetary Policy? In: The American Economic Review 90, 407–428.

Kaufmann, S. (2001). Asymmetries in Bank Lending Behaviour. Austria during the 90s. Mimeo, Oester- reichische Nationalbank, Vienna.

Kiyotaki, N. (1998). Credit and Business Cycles. In: Japanese Economic Review, Vol. 49, I, 18–35.

Levine, R. (2002). Bank-Based or Market-Based Financial Systems: Which is Better? In: NBER Working Paper No. 9138.

Mairesse, J., Hall, B. H., Mulkay, B. (1999). Firm-Level Investment in France and the United States: An Exploration of What We Have Learned in Twenty Years. In: NBER Working Paper No. 7437.

Mojon, B., Smets, F., Vermeulen, P. (2000). Investment and Monetary Policy in the Euro Area. European Central Bank, mimeo.

Oliner, S. D., Rudebusch, G. D. (1996). Is there a Broad Channel for Monetary Policy? In: Federal Reserve Bank of San Francisco Economic Review, Vol. 1, 3–13.

Ongena, S., Smith, D.C. (1998). Bank Relationships: A Review. In the Performance of Financial Institutions, In: Zenios, S., Harker, P. (eds.). Performance of Financial Institutions. Cambridge University Press, 221–258.

Ongena, S., Smith, D., Michalsen, D. (2000). Firms and Their Distressed Banks: Lessons from the Norwegian Banking Crisis (1988-1991). In: Journal of Financial Economics, 67.1, 81–112.

Peek, J., Rosengren, E. S. (1995). Bank Regulation and the Credit Crunch. In: Journal of Banking and Finance, 19, 679–692 (a).

Petersen, M., Rajan, R. (1994). The Benefits of Lending Relationships: Evidence from Small Business Data. In: Journal of Finance 49, 1367–1400.

Petersen, M., Rajan, R. (1995). The Effect of Credit Market Competition on Lending Relationships. In: Quarterly Journal of Economics 110, 406–443.

Stiglitz, J. E., Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information. The American Economic Review 71, 393–410.

Tsuru, K. (2000). Finance and Growth: Some Theoretical Considerations, and a Review of the Empirical Literature. In: OECD Working Paper No. 228.

Valderrama, M. T. (2003). Credit Channel and Investment Behavior in Austria: A Micro-Econometric Approach. In: Angeloni, I., Kashyap, A., Mojon, B. (eds.). Monetary Policy Transmission in the Euro Area, Cambridge University Press (forthcoming).

Vermeulen, P. (2000). Business Fixed Investment: Evidence of a Financial Accelerator in Europe. In: Working Paper No. 37, European Central Bank.

Wesche, K. (2000). Is There a Credit Channel in Austria? The Impact of Monetary Policy on Firms' Investment Decisions. In: Working Paper No. 41, Oesterreichische Nationalbank, Vienna.

Yamori, N., Murakami, A. (1999). Does Bank Relationship Have an Economic Value? The Effect of Main Bank Failure on Client Firms. In: Economics Letters 65, 115–120.

Annex

Table 1a

Descriptive Statistics: Investment Ratio

	all	young	old	small	large
Observations	11,450	2,339	9,111	2,414	9,036
%					
Mean	9.66	9.88	9.61	7.31	10.29
Standard deviation	9.50	10.37	9.26	9.63	9.36
Minimum	− 3.42	− 3.42	− 0.51	− 0.51	− 3.42
Maximum	57.24	57.17	57.24	57.24	57.17
without a house bank					
Observations	4,809	1,035	3,774	803	4,006
%					
Mean	9.99	10.11	9.95	7.26	10.53
Standard deviation	9.61	10.25	9.42	9.45	9.54
Minimum	0.00	0.00	0.00	0.00	0.00
Maximum	57.14	57.14	57.13	56.81	57.14
with a house bank					
Observations	6,641	1,304	5,337	1,611	5,030
%					
Mean	9.43	9.70	9.36	7.34	10.10
Standard deviation	9.41	10.46	9.14	9.73	9.21
Minimum	− 3.42	− 3.42	− 0.51	− 0.51	− 3.42
Maximum	57.24	57.17	57.24	57.24	57.17
with a large house bank					
Observations	3,140	707	2,433	597	2,543
%					
Mean	9.07	9.74	8.88	6.16	9.76
Standard deviation	9.04	10.19	8.67	8.98	8.92
Minimum	− 0.51	0.04	− 0.51	− 0.51	0.06
Maximum	57.17	57.17	55.97	53.73	57.17
with a medium-sized house bank					
Observations	1,908	351	1,557	459	1,449
%					
Mean	10.09	9.84	10.14	8.27	10.67
Standard deviation	9.81	10.71	9.60	9.81	9.75
Minimum	0.00	0.00	0.01	0.00	0.02
Maximum	56.88	55.34	56.88	53.08	56.88
with a small house bank					
Observations	1,593	246	1,347	555	1,038
%					
Mean	9.34	9.38	9.33	7.85	10.13
Standard deviation	9.61	10.90	9.36	10.31	9.12
Minimum	− 3.42	− 3.42	0.00	0.00	− 3.42
Maximum	57.24	52.95	57.24	57.24	56.92

Table 1b

Descriptive Statistics: Growth in Net Sales

	all	young	old	small	large
Observations	11,570	2,364	9,206	2,416	9,154
%					
Mean	3.40	5.12	2.95	2.28	3.69
Standard deviation	16.51	17.77	16.14	18.30	16.00
Minimum	− 74.92	− 68.67	− 74.92	− 74.92	− 74.79
Maximum	81.38	81.12	81.38	79.51	81.38%
without a house bank					
Observations	4,844	1,045	3,799	798	4,046
%					
Mean	3.60	5.38	3.11	3.00	3.72
Standard deviation	15.86	16.95	15.51	18.50	15.29
Minimum	− 71.60	− 66.40	− 71.60	− 71.12	− 71.60
Maximum	79.82	73.88	79.82	78.59	79.82
with a house bank					
Observations	6,726	1,319	5,407	1,618	5,108
%					
Mean	3.25	4.92	2.84	1.93	3.67
Standard deviation	16.97	18.40	16.57	18.20	16.54
Minimum	− 74.92	− 68.67	− 74.92	− 74.92	− 74.79
Maximum	81.38	81.12	81.38	79.51	81.38
with a large house bank					
Observations	3,156	709	2,447	582	2,574
%					
Mean	3.23	4.82	2.77	1.82	3.55
Standard deviation	16.84	19.02%	16.13	19.55	16.16
Minimum	− 74.79	− 68.67	− 74.79	− 68.67	− 74.79
Maximum	81.12	81.12	80.45	75.62	81.12
with a medium-sized house bank					
Observations	1,937	355	1,582	467	1,470
%					
Mean	3.32	5.65	2.79	2.05	3.72
Standard deviation	16.59	16.84	16.49	16.57	16.58
Minimum	− 73.23	− 57.03	− 73.23	− 62.03	− 73.23
Maximum	81.38	76.93	81.38	70.92	81.38
with a small house bank					
Observations	1,633	255	1,378	569	1,064
%					
Mean	3.21	4.18	3.03	1.96	3.88
Standard deviation	17.65	18.80	17.43	18.08	17.39
Minimum	− 74.92	− 60.83	− 74.92	− 74.92	− 70.06
Maximum	79.51	71.23	79.51	79.51	78.93

Table 1c

Descriptive Statistics: User Cost of Capital

	all	young	old	small	large
Observations	13,612	3,067	10,545	2,908	10,704
%					
Mean	11.76	11.90	11.72	12.28	11.62
Standard deviation	2.16	2.09	2.17	2.38	2.07
Minimum	6.96	6.96	6.96	6.96	6.96
Maximum	25.42	24.90	25.42	24.90	25.42
without a house bank					
Observations	5,683	1,353	4,330	988	4,695
%					
Mean	11.75	12.04	11.66	12.19	11.66
Standard deviation	2.13	2.15	2.12	2.46	2.04
Minimum	6.96	6.96	6.96	6.96	6.96
Maximum	25.42	24.90	25.42	24.90	25.42
with a house bank					
Observations	7,929	1,714	6,215	1,920	6,009
%					
Mean	11.77	11.79	11.77	12.32	11.59
Standard deviation	2.17	2.04	2.21	2.34	2.09
Minimum	6.96	7.31	6.96	6.96	6.96
Maximum	24.77	21.62	24.77	24.77	22.21
with a large house bank					
Observations	3,499	878	2,621	692	2,807
%					
Mean	11.62	11.77	11.56	12.25	11.46
Standard deviation	2.09	2.00	2.12	2.29	2.01
Minimum	7.02	7.67	7.02	7.62	7.02
Maximum	21.93	20.98	21.93	21.10	21.93
with a medium-sized house bank					
Observations	2,445	490	1,955	550	1,895
%					
Mean	11.85	11.74	11.88	12.22	11.75
Standard deviation	2.21	2.04	2.25	2.44	2.12
Minimum	6.96	7.31	6.96	6.98	6.96
Maximum	23.79	20.32	23.79	23.79	22.15
with a small house bank					
Observations	1,985	346	1,639	678	1,307
%					
Mean	11.94	11.89	11.95	12.48	11.65
Standard deviation	2.26	2.13	2.28	2.30	2.18
Minimum	6.96	7.32	6.96	6.96	7.00
Maximum	24.77	21.62	24.77	24.77	22.21

<div style="text-align:right">Table 1d</div>

Descriptive Statistics: Liquidity Ratio

	all	young	old	small	large
Observations	11,757	2,407	9,350	2,478	9,279
%					
Mean	44.7	47.8	43.9	49.0	43.5
Standard deviation	30.2	31.5	29.8	35.6	28.5
Minimum	0.0	0.1	0.0	0.2	0.0
Maximum	204.2	204.2	203.2	204.2	203.2
without a house bank					
Observations	4,921	1,060	3,861	821	4,100
%					
Mean	44.1	44.9	43.9	49.1	43.1
Standard deviation	30.1	29.1	30.3	36.2	28.6
Minimum	0.1	0.1	0.2	0.2	0.1
Maximum	203.2	192.3	203.2	202.1	203.2
with a house bank					
Observations	6,836	1,347	5,489	1,657	5,179
%					
Mean	45.1	50.1	43.9	49.0	43.9
Standard deviation	30.3	33.1	29.5	35.3	28.4
Minimum	0.0	0.4	0.0	0.8	0.0
Maximum	204.2	204.2	203.2	204.2	203.2
with a large house bank					
Observations	3,210	726	2,484	602	2,608
%					
Mean	48.0	51.7	46.9	55.3	46.3
Standard deviation	32.1	34.0	31.4	39.7	29.8
Minimum	0.3	0.4%	0.3	3.2	0.3
Maximum	203.2	201.1	203.2	201.1	203.2
with a medium-sized house banknumber					
Observations	1,974	365	1,609	479	1,495
%					
Mean	42.9	45.7	42.3	45.4	42.1
Standard deviation	28.3	31.5	27.5	31.2	27.2
Minimum	0.0	4.0	0.0	1.2	0.0
Maximum	204.2	204.2	182.8	204.2	182.8
with a small house banknumber					
Observations	1,652	256	1,396	576	1,076
%					
Mean	42.0	52.1	40.2	45.3	40.3
Standard deviation	28.7	32.5	27.5	32.7	26.1
Minimum	0.8	8.0	0.8	0.8	2.3
Maximum	197.1	188.8	197.1	197.1	188.8

Table 2

Investment Function

All Banks GMM–two step estimator in first differences

	Coefficient all	P>|z|	Coefficient young	P>|z|	Coefficient old	P>|z|	Coefficient small	P>|z|	Coefficient large	P>|z|
Number of observations	7,150		1,126		6,024		1,345		5,805	
Number of firms	1,728		430		1,434		451		1,386	
Investment ratio$_{t-1}$	0.143	0.0	0.006	0.89	0.024	0.60	−0.152	0.00	0.136	0.00
Growth in net sales$_t$	−0.009	0.7	0.079	0.00	−0.019	0.40	−0.030	0.00	0.023	0.31
Growth in net sales$_{t-1}$	0.011	0.2	−0.008	0.69	0.018	0.05	0.019	0.00	0.009	0.34
Change in user cost of capital$_t$	−0.051	0.2	−0.022	0.61	−0.068	0.09	−0.090	0.00	−0.038	0.34
Change in user cost of capital$_{t-1}$	−0.052	0.0	0.066	0.00	−0.054	0.00	−0.113	0.00	−0.036	0.01
Liquidity ratio$_t$	0.120	0.0	−0.057	0.22	0.110	0.00	0.013	0.01	0.082	0.00
Liquidity ratio$_{t-1}$	0.046	0.1	0.181	0.00	0.052	0.06	0.054	0.00	0.094	0.00
Investment ratio$_{t-1}$* HB	−0.089	0.3	−0.070	0.32	0.104	0.17	0.145	0.00	−0.092	0.21
Growth in net sales$_t$* HB	0.007	0.8	−0.055	0.10	0.023	0.47	0.039	0.00	−0.007	0.82
Growth in net sales$_{t-1}$* HB	0.000	1.0	0.018	0.43	−0.008	0.49	−0.010	0.16	0.004	0.76
Change in user cost of capital$_t$* HB	0.031	0.4	−0.019	0.68	0.032	0.40	0.052	0.00	0.021	0.58
Change in user cost of capital$_{t-1}$* HB	0.013	0.5	−0.161	0.00	0.029	0.11	0.081	0.00	−0.003	0.84
Liquidity ratio$_t$* HB	0.030	0.4	0.139	0.01	0.025	0.52	0.022	0.04	0.038	0.31
Liquidity Ratio$_{t-1}$* HB	0.014	0.7	−0.070	0.25	0.009	0.82	0.060	0.00	−0.058	0.19
Sargan test:	279.7	1.0	127.8	1.00	265.4	1.00	246.3	1.00	293.8	0.98
m1:	− 14.7	0.0	− 5.7	0.00	− 13.5	0.00	− 5.2	0.00	− 13.7	0.00
m2:	0.3	0.8	− 0.6	0.55	− 0.3	0.78	− 0.7	0.48	0.3	0.73
Long-run elasticities:										
Growth in net sales	0.002	0.9	0.072	0.04	−0.001	0.97	−0.009	0.05	0.037	0.22
Growth in net sales * HB	0.010	0.8	0.032	0.27	0.016	0.63	0.018	0.08	0.029	0.32
Change in user cost of capital	−0.121	0.0	0.044	0.40	−0.126	0.02	−0.176	0.00	−0.085	0.13
Change in user cost of capital * HB	−0.063	0.2	−0.128	0.01	−0.071	0.15	−0.069	0.00	−0.058	0.20
Liquidity ratio	0.194	0.0	0.125	0.01	0.166	0.00	0.058	0.00	0.204	0.00
Liquidity ratio * HB	0.222	0.0	0.181	0.00	0.224	0.00	0.147	0.00	0.163	0.00

Note: Time dummies and a constant were included but not reported.

Instrumental variables: all lagged levels of endogenous and predetermined variables.

Small firms are firms with less than 55 employees; young firms are firms established in the last ten years.

Table 3

Investment Function

Large Banks GMM-two step estimator in first differences

	Coefficient all	P>|z|	Coefficient young	P>|z|	Coefficient old	P>|z|	Coefficient small	P>|z|	Coefficient large	P>|z|
Number of observations	3,427		601		2,826		521		2,906	
Number of firms	939		249		762		191		788	
Investment ratio$_{t-1}$	0.081	0.0	−0.012	0.73	−0.004	0.91	−0.106	0.00	0.069	0.06
Growth in net sales$_t$	−0.043	0.0	−0.017	0.25	−0.045	0.01	0.011	0.00	0.003	0.88
Growth in net sales$_{t-1}$	0.009	0.4	0.016	0.31	0.014	0.15	0.012	0.00	0.007	0.53
Change in user cost of capital$_t$	−0.091	0.0	−0.072	0.07	−0.088	0.01	−0.051	0.00	−0.095	0.00
Change in user cost of capital$_{t-1}$	−0.021	0.1	−0.010	0.64	−0.029	0.04	−0.091	0.00	−0.022	0.11
Liquidity ratio$_t$	0.015	0.4	−0.005	0.87	0.032	0.08	−0.019	0.00	0.029	0.07
Liquidity ratio$_{t-1}$	0.090	0.0	0.292	0.00	0.060	0.00	0.041	0.00	0.138	0.00
Investment ratio$_{t-1}$* HB	−0.022	0.7	−0.080	0.06	0.100	0.05	0.090	0.00	−0.023	0.69
Growth in net sales$_t$* HB	0.126	0.0	−0.010	0.60	0.114	0.00	0.027	0.00	0.047	0.07
Growth in net sales$_{t-1}$* HB	0.005	0.7	−0.019	0.27	−0.007	0.61	−0.024	0.00	0.000	0.99
Change in user cost of capital$_t$* HB	0.026	0.5	−0.021	0.71	0.065	0.05	−0.062	0.00	0.028	0.40
Change in user cost of capital$_{t-1}$* HB	0.000	1.0	−0.095	0.00	0.022	0.22	0.041	0.00	−0.011	0.55
Liquidity ratio$_t$* HB	−0.039	0.2	0.065	0.05	−0.038	0.16	0.023	0.00	−0.054	0.04
Liquidity ratio$_{t-1}$* HB	0.021	0.5	−0.159	0.00	0.052	0.08	0.040	0.00	−0.012	0.70
Sargan test:	265.3	1.0	115.4	1.00	228.1	1.00	161.1	1.00	263.1	1.00
m1:	− 10.0	0.0	− 4.2	0.00	− 8.6	0.00	− 3.3	0.00	− 9.2	0.00
m2:	0.1	0.9	− 0.6	0.53	0.4	0.69	− 1.0	0.32	0.5	0.60
Long-run elasticities:										
Growth in net sales * HB	0.103	0.0	−0.028	0.21	0.085	0.00	0.026	0.00	0.059	0.02
Change in user cost of capital * HB	−0.091	0.0	−0.181	0.00	−0.032	0.46	−0.160	0.00	−0.105	0.01
Liquidity ratio * HB	0.093	0.0	0.176	0.00	0.117	0.00	0.083	0.00	0.105	0.00

Note: Time dummies and a constant were included but not reported.

Instrumental variables: all lagged levels of endogenous and predetermined variables.

Small firms are firms with less than 55 employees; young firms are firms established in the last ten years.

Large banks are banks with assets of more than EUR 24.1 million.

Table 4

Investment Function

Medium-Sized Banks GMM-two step estimator in first differences

	Coefficient all	P>lzl	Coefficient young	P>lzl	Coefficient old	P>lzl	Coefficient small	P>lzl	Coefficient large	P>lzl
Number of observations	2,184		328		1,856		378		1,806	
Number of firms	708		154		581		151		583	
Investment ratio$_{t-1}$	−0.171	0.0	−0.152	0.00	−0.136	0.00	−0.240	0.00	−0.166	0.00
Growth in net sales$_t$	0.040	0.0	0.092	0.00	0.019	0.17	0.008	0.28	0.016	0.21
Growth in net sales$_{t-1}$	0.006	0.6	0.064	0.00	0.007	0.38	0.011	0.09	−0.003	0.74
Change in user cost of capital$_t$	0.008	0.8	0.071	0.00	0.003	0.90	−0.042	0.04	−0.025	0.29
Change in user cost of capital$_{t-1}$	0.011	0.4	0.090	0.00	−0.021	0.13	−0.138	0.00	0.001	0.95
Liquidity ratio$_t$	0.082	0.0	0.092	0.00	0.119	0.00	0.189	0.00	0.092	0.00
Liquidity ratio$_{t-1}$	0.069	0.0	0.203	0.00	0.076	0.00	0.110	0.00	0.079	0.00
Investment ratio$_{t-1}$* HB	0.311	0.0	−0.076	0.00	0.215	0.00	0.169	0.00	0.269	0.00
Growth in net sales$_t$* HB	-0.014	0.5	−0.030	0.00	0.016	0.33	0.011	0.16	0.040	0.01
Growth in net sales$_{t-1}$* HB	0.017	0.2	−0.020	0.08	0.018	0.08	0.017	0.01	0.027	0.02
Change in user cost of capital$_t$* HB	0.012	0.7	0.095	0.00	−0.029	0.33	−0.072	0.00	−0.005	0.85
Change in user cost of capital$_{t-1}$* HB	−0.033	0.1	−0.190	0.00	0.009	0.58	0.049	0.00	−0.015	0.36
Liquidity ratio$_t$* HB	0.012	0.7	−0.015	0.22	-0.040	0.06	−0.120	0.00	−0.061	0.01
Liquidity ratio$_{t-1}$* HB	0.021	0.4	−0.063	0.01	0.031	0.10	0.019	0.20	0.069	0.00
Sargan test:	262.7	1.0	98.9	1.00	255.4	1.00	121.6	1.00	293.9	0.98
m1:	− 8.2	0.0	− 2.5	0.01	− 7.3	0.00	− 2.5	0.01	− 7.5	0.00
m2:	0.0	1.0	− 1.1	0.30	0.7	0.49	− 0.7	0.52	− 0.2	0.85
Long-run elasticities:										
Growth in net sales * HB	0.058	0.0	0.086	0.00	0.066	0.00	0.044	0.00	0.089	0.00
Change in user cost of capital * HB	−0.002	1.0	0.054	0.00	−0.041	0.15	−0.189	0.00	−0.050	0.03
Liquidity ratio * HB	0.215	0.0	0.177	0.00	0.201	0.00	0.184	0.00	0.200	0.00

Note: Time dummies and a constant were included but not reported.

Instrumental variables: all lagged levels of endogenous and predetermined variables.

Small firms are firms with less than 55 employees; young firms are firms established in the last ten years.

Medium-sized banks are banks with assets of more than EUR 3.2 million and less than EUR 24.1 million.

Table 5

Investment Function

Small Banks GMM-two step estimator in first differences

	Coefficient all	P>|z|	Coefficient young	P>|z|	Coefficient old	P>|z|	Coefficient small	P>|z|	Coefficient large	P>|z|
Number of observations	1,539		197		1,342		446		1,093	
Number of firms	487		91		424		162		359	
Investment ratio$_{t-1}$	−0.260	0.0	−0.551	0.00	−0.233	0.00	−0.383	0.00	−0.175	0.00
Growth in net sales$_t$	0.029	0.0	0.021	0.61	0.048	0.00	−0.037	0.00	0.054	0.00
Growth in net sales$_{t-1}$	0.022	0.0	−0.177	0.00	0.059	0.00	0.005	0.41	0.010	0.01
Change in user cost of capital$_t$	−0.066	0.0	−0.108	0.01	−0.009	0.35	−0.082	0.00	0.009	0.23
Change in user cost of capital$_{t-1}$	−0.053	0.0	0.131	0.00	−0.071	0.00	−0.195	0.00	−0.025	0.00
Liquidity ratio$_t$	0.119	0.0	0.069	0.04	0.115	0.00	0.174	0.00	0.105	0.00
Liquidity ratio$_{t-1}$	0.110	0.0	0.271	0.00	0.052	0.00	−0.055	0.00	0.122	0.00
Investment ratio$_{t-1}$* HB	0.333	0.0	0.460	0.00	0.315	0.00	0.181	0.00	0.203	0.00
Growth in net sales$_t$* HB	−0.040	0.0	−0.007	0.89	−0.060	0.00	0.034	0.00	−0.049	0.00
Growth in net sales$_{t-1}$* HB	−0.027	0.0	0.151	0.00	−0.056	0.00	−0.040	0.00	0.012	0.00
Change in user cost of capital$_t$* HB	−0.020	0.3	−0.171	0.04	−0.031	0.04	0.105	0.00	−0.103	0.00
Change in user cost of capital$_{t-1}$* HB	0.000	1.0	−0.232	0.00	0.030	0.05	0.174	0.00	−0.078	0.00
Liquidity ratio$_t$* HB	−0.062	0.0	0.003	0.91	−0.036	0.00	−0.027	0.33	−0.066	0.00
Liquidity ratio$_{t-1}$* HB	0.011	0.5	−0.099	0.03	0.031	0.03	0.220	0.00	−0.040	0.00
Sargan test:	259.7	1.0	50.3	1.00	254.7	1.00	138.7	1.00	239.7	1.00
m1:	− 6.2	0.0	− 1.8	0.08	− 5.8	0.00	− 2.4	0.02	− 5.4	0.00
m2:	− 2.1	0.0	− 0.4	0.67	− 2.5	0.01	− 1.3	0.19	− 2.2	0.03
Long-run elasticities:										
Growth in net sales * HB	−0.019	0.2	−0.012	0.57	−0.009	0.50	−0.031	0.00	0.028	0.00
Change in user cost of capital * HB	−0.150	0.0	−0.349	0.00	−0.088	0.00	0.002	0.66	−0.203	0.00
Liquidity ratio * HB	0.193	0.0	0.224	0.00	0.175	0.00	0.259	0.00	0.124	0.00

Note: Time dummies and a constant were included but not reported.

Instrumental variables: all lagged levels of endogenous and predetermined variables.

Small firms are firms with less than 55 employees; young firms are firms established in the last ten years.

Small banks are banks with assets of less than EUR 3.2 million.

I Introduction

Klaus Gugler[1])

Financial sector development can affect growth mainly via three channels.[2]) First, a deepening of the financial sector can raise the fraction of savings funnelled to investment by reducing the costs of financial intermediation through increased competition. Second, financial sector development can contribute to economic growth by allocating capital more efficiently to those investment projects with the highest risk-adjusted returns. Third, it can influence the saving rate of households, thereby affecting investment and growth. This paper is primarily concerned with the first and second channels: it tests the influence of cash-constraints on the investment decisions of the firm.

One of the main roles of the financial system is to transfer funds from agents with a surplus of resources to agents with a deficit of resources. By discriminating between firms that potentially underinvest and firms that potentially overinvest on the basis of the corporate governance structure, we throw light on the efficiency of firms when deciding on investment. This entails important policy conclusions for policymakers and financial sector regulatory bodies alike. For investment efficiency it matters which type of firms gets less resources and which type of firm gets more funds for investment. Thus, in the course of financial sector development, policymakers should make sure that it is *under-investing* firms that get more liquid funds for investment and *overinvesting* firms be constrained in their use of funds.

This paper asks whether the corporate governance characteristics of a firm affect the efficiency of corporate investment. We find significant and robust differences of the investment-cash flow relation across different control categories. For nonfinancial Austrian firms, this relationship depends on the identity of the controlling owners. In particular, we find positive investment-cash flow sensitivities for family-controlled firms indicating cash constraints and underinvestment. Family control is likely to induce information asymmetries between inside controlling shareholders and outside financiers concerning the quality and riskiness of investment driving a wedge between the costs of external and internal financing. State control also induces informational asymmetries between (ultimate) "shareholders" (i.e. the citizens) and firm managers. However, the positive investment-cash flow elasticities we find for these firms suggest managerial discretion and overinvestment. Banks as large controlling shareholders appear to reduce both asymmetric information and managerial discretion. Rates-of-return calculations corroborate these conclusions.

We interpret this evidence as being consistent with corporate governance features affecting both the discretion that managers have to use available funds, and their ability to acquire additional funds for investment. Thus, corporate

governance features of "bank-based" (Edwards and Fischer, 1994) or "insider" (Franks and Mayer, 1997)[1]) systems of finance must not be neglected when testing hypotheses about capital market efficiency.

The paper is organized as follows. Section 2 gives a short description of our two main hypotheses, the cash constraints hypothesis (CCH) and the managerial discretion hypothesis (MDH), and links them to the ownership and control structure of firms. Section 3 describes the data. Section 4 presents the main results, while section 5 concludes.

2 Cash Constraints, Managerial Discretion, and Corporate Governance

Chart 1 presents the two main hypotheses. With perfect capital markets, the supply of funds, S, is a horizontal line at r, the risk-adjusted market rate of interest. Internal and external funds are perfect substitutes. The demand for capital investment, D, is assumed to be downward sloping. In the neoclassical theory a firm's investment depends only on this demand and its cost of capital, and is independent of the size of its cash flow. A neoclassical firm invests up to I^*, where the expected marginal profitability of investment equals its marginal cost. In this Modigliani/Miller (1958) world, financial factors are irrelevant. The more developed a financial system is, the more firms will resemble neoclassical firms in a given country.

In contrast to the neoclassical theory, the *Cash Constraints Hypothesis (CCH)* posits a rising cost of capital schedule once a firm enters the external capital market due to asymmetric information causing adverse selection.[2]) With rising costs of external capital the supply of capital, S, is dependent on the level of cash flows. At cash flow CF^a the firm is constrained to invest I^a. It under-invests. If cash flow increases from CF^a to CF^b, the cost of funds schedule shifts from $S(CF^a)$ to $S(CF^b)$ and the firm invests I^b. Thus, the CCH implies a positive sensitivity of investment to cash flow.[3]) Other empirical predictions are (1) dividends should (essentially) be zero, (2) the marginal return on investment should exceed the firm's cost of capital.

A positive investment cash-flow sensitivity is also expected according to the *Managerial Discretion Hypothesis (MDH).*[4]) Following Marris (1964, 1998),

---

1　Franks and Mayer (1997) characterize an "insider system" of corporate governance as one with (1) few listed companies, (2) a large number of substantial share stakes and (3) large intercorporate equityholdings. The Austrian system is characterized by all of these features (see Gugler, 2002, and Gugler et al., 2001).

2　Myers and Majluf (1984) posit that firms may be cash-constrained because outside investors have less information than the owner-managers about the true value of assets or investment opportunities. Cash-constrained managers maximize incumbent shareholder wealth by foregoing some positive NPV projects rather than issue equity, which is currently undervalued due to asymmetric information. Adverse selection can also lead to credit rationing (Stiglitz and Weiss, 1981). Uncollateralized credit could be denied to firms if adverse selection of loan applicants leads banks to choose an interest rate at which the market does not clear.

3　Indeed, if none of the companies could raise any external capital, S would be a vertical line at the firms' cash flow. Their investments should exactly equal their cash flows, and the coefficient on cash flow in an investment equation would equal 1.0.

4　Managerialist theories of the firm (Baumol, 1959; Williamson, 1963; Marris, 1963, 1964; Grabowski and Mueller, 1972) and the principal agent literature (Jensen and Meckling, 1976; Jensen, 1986) question the profit maximization assumption. For a recent survey of the influence of asymmetric information and agency on the efficiency of corporate investment, see Stein (2001).

managers' utility $U = U(g(I), p(d))$ is an increasing function of growth g, which rises with investment, and a decreasing function of the probability of corporate governance intervention, p. This probability is assumed to be zero at the optimal investment I^*, where the value of the firm is at its maximum, $V^* = D^*|r$, equal to the discounted present value of optimum dividends. As I increases beyond I^* the value of the firm falls and p rises with the difference between optimum and actual dividends, $d = V^* - V = (D^* - D)|r$. In Anglo-Saxon "market-based" systems external controls such as hostile takeovers, may be triggered by such overinvestment. In "insider" systems, such as those in Continental Europe, dominant shareholders may step in. Managerial investment, I^m in chart 1, and dividends, $CF^m - I^m$, are chosen to maximize managerial utility by equating the marginal gain in utility derived from increasing growth by increasing investment to the marginal decline in utility from the increase in the probability of corporate governance intervention caused by the corresponding reduction in dividends. That is, the optimization problem of the manager is max $U = U[g(I), p((D^* - D)|r)]$ *s.t.* $CF = D + I$ with respect to I.[1] I^m is determined by the intersection of the manager's indirect marginal utility of investment schedule and the indirect marginal (dis)utility schedule, $MU_1 = (\delta U/\delta g)(dg/dI) = MD_I = -(\delta U/\delta p)(dp/dI)$. A cash-flow increase from CF^m to $CF^{m'}$ shifts MD_I to MD_I' in chart 1: The decline in managerial utility from incremental investment is now lower at every investment level, because the threat of governance intervention is lower when dividends are higher. The optimal investment for managers increases from I^m to $I^{m'}$ and dividends increase from $CF^m - I^m$ to $CF^{m'} - I^{m'}$. A cash-flow increase is like a shift in the managerial budget constraint, and allows managers to increase both investment and dividends. Control failure leads to "cheap" internal finance and managers overinvest. The MDH implies that (1) the investment-cash flow coefficient is positive (but less than one), (2) dividends are positive, and (3) the marginal return on investment is below the cost of capital.[2]

In what follows we discuss the dependency of the CCH and the MDH on the ownership and control structure of the firm, by portraying the four most important categories of controlling shareholders in Austria, i.e. banks, the state, families, and foreign firms.[3]

Potentially, bank equity holdings reduce the asymmetry of information between shareholders and financiers and/or managers. Banks can gain an informational advantage from equity holdings in commercial firms via ownership disclosure rights, representation on the supervisory board, nominating manag-

---

1   *This managerial budget constraint assumes for simplicity that internal cash flow is the only source of funds, i.e. that new debt and new equity issues are zero.*

2   *The CCH and the MDH are also in line with a "life-cycle" model of the firm (Mueller, 1972, and Grabowski and Mueller, 1975) according to which young, fast growing firms use internal finance to mitigate transaction costs of external finance, and large, mature firms use internal finance to maximize growth at the expense of shareholder wealth. See also Kathuria and Mueller (1995) and Carpenter (1995).*

3   *Institutional investors, such as pension funds, are unimportant in Austria. It has been possible to form pension funds only since 1990 (see Jud, 1993). Very similar ownership patterns are observed especially in Germany (see Boehmer, 1998) but also many other countries worldwide (see La Porta et al., 1997, 1999, and Barca and Becht, 2001).*

ers, or information acquisition through bank lending. When a bank owns a large stake in a firm to which it lends, its residual control rights lead it to monitor the firm's investments more closely (Gertner et al., 1994). Therefore, we hypothesize that bank-controlled firms do not exhibit positive investment-cash flow sensitivities.

The government is a large controlling shareholder in many corporations worldwide.[1] The MDH is expected to hold for state-controlled firms, because citizens can be viewed as very *dispersed ultimate* owners (the "principals") with insufficient incentives and an ability to monitor the state (the first "agent"), which in turn has mixed incentives to monitor managers (the ultimate agents). The de facto control rights belong to managers, bureaucrats, or politicians who typically have goals very different from firm value maximization (Shleifer and Vishny, 1997; Mueller, 1998). Overspending, short-run employment gains (and thereby "buying" votes) are likely incentives in state-controlled firms. On the other hand, cash constraints are not expected, if the state is a major shareholder because the incentive alignment between controlling managers and citizens (as ultimate owners) is weak. There is no reason for managers of state-controlled firms to favor existing over new shareholders and not issue equity, as hypothesized in the asymmetric information hypothesis of Myers and Majluf (1984). Nor does credit rationing seem likely, since the risk of bankruptcy is low and there is no adverse selection of loan applicants.[2] Therefore, any positive investment-cash flow coefficient for state-controlled firms must be attributed to the managerial discretion hypothesis.

Cash constraints should be most severe for family-controlled firms, where owner-managers maximize existing shareholder wealth. Hadlock (1998), extending Myers and Majluf (1984), demonstrates that investment-cash flow sensitivities rise with managerial incentive alignment for firms with good investment opportunities. Almost by definition, managerial incentive alignment is very high in family-controlled firms. Furthermore, information transfer to the capital market is most difficult in these closely held firms. This increases asymmetry of information and security mispricing. Thus, family owner-managers are expected to forgo an investment rather than sell an underpriced security.[3]

Managerial discretion, on the other hand, is not expected in family-controlled firms. Managers and large family shareholders are either the same persons, and therefore, the residual claimants bearing (nearly) all of the costs and receiving (nearly) all of the benefits of their actions (incentive alignment), or the large shareholder has the incentive and ability to monitor the managers. Therefore, any positive investment-cash flow sensitivity for family-controlled firms can be attributed to the cash constraints hypothesis.[4]

1   *La Porta et al. (1999) report that the state on average controls 20% of the twenty largest corporations in 27 countries in 1995; selected figures are Italy 40%, Germany 25%, France 15%, Japan 5%, US 0%, and UK 0%.*

2   *Historically, in Austria banks converted debt to equity and took control of state-influenced companies in cases of financial distress (Mathis, 1990).*

3   *Gugler (2001) shows that Austria has the smallest stock exchange as measured by the market capitalization to GDP ratio in a sample of OECD countries.*

4   *Family owned/managed firms may, however, suffer from a lack of professionalism (see Chandler, 1990, particularly for the UK).*

Ultimate owners of foreign firms may be banks, a foreign state or families, and so no clear-cut a priori expectations are formed.[1]) Since foreign-controlled firms are very important in Austria, we have left them in the analysis. Table 1 summarizes our predictions about cash-flow coefficients.

3 The Data and Ownership and Control Concepts

An unbalanced panel of firms is assembled to test these hypotheses. It includes 214 Austrian nonfinancial companies and spans the period 1991 to 1999. The sample is drawn from the 600 largest corporations in Austria (the criterion for inclusion is data availability). Balance sheet data sources are the "Wirtschafts-Trend-Zeitschriftenverlagsgesellschaft m.b.H," the "Arbeiterkammer Öster-reich" and "Compass Verlag." Ownership data were gathered from "Der Finanz-compass" and Hoppenstedt's "Großunternehmen in Österreich" (several annual editions). The sample covers around 10% of Austrian private sector employ-ment.

To determine the ultimate owners of a corporate pyramid, one must identify the owners at each consecutive level until the top layer of the pyramid is reached. *Direct* ownership stakes are aggregated into bank (BA), state (ST), family (FAM), nonbank domestic firm (NBD), foreign firm (FF), and dispersed (DI) ownership. "State" ownership includes central, federal, and local levels of government. "Bank" ownership includes equity-holdings of corporations oper-ating in the financial sector (mostly banks). "Nonbank domestic" and "foreign firm" ownership are holdings of nonfinancial domestic and foreign firms, respectively. The criterion for nationality is the location of the headquarters. "Family" ownership includes ownership stakes of families and individuals. Equity holdings smaller than 5% are defined as "dispersed."

Ultimate ownership is defined as the percentage equity ownership of a shareholder *at the top* of the pyramid including direct ownership and *indirect* ownership via other corporations. An indirect ownership stake arises through a multiplicative ownership chain in a pyramid. An indirect ownership stake of, for example, the state is defined as the *multiplicative ownership chain,* $\alpha_{ST,NBD_2} \cdot \alpha_{NBD_2,NBD_3} \cdots \alpha_{NBD_{m-1},j}$, where α_{ik} is the direct ownership of share-holder i in firm k and m is the layer of sample firm j (or "Hierarchy," see below). The five *ultimate ownership categories* are state, banks, families, foreign firms, and dispersed. The state, families, and dispersed ownership are natural ultimate categories. Banks are included as an ultimate category to test hypoth-eses about bank control. Because ownership data for foreign firms are lacking, they are also defined as an ultimate category.

Direct and ultimate ownership measure cash-flow rights, i.e. the right to receive a proportional stake of the cash flows of the company. The degree of *control* is likely to follow a step function, however. The third concept, therefore, is the *largest ultimate shareholder (LUS)*. Full *control* over a company is attributed to the LUS, who is either the state, a bank, a family, or a foreign firm. A LUS must meet the constraint that each individual holding in its ownership chain is larger than 25%. (By definition, therefore, *control* cannot be attributed to dispersed shareholders.) By far the largest part of LUSs in Austria (90%) maintain a chain

---

1   *Unfortunately, we have no data about these ultimate owners.*

of majority ownership stakes. This guarantees a controlling influence in each layer of the pyramid.

Chart 2 helps clarify the concepts. OMV AG is the largest Austrian corporation as measured by turnover. It is located at the third layer of the pyramid ("Hierarchy" = 3). The ownership structure of OMV AG is simple but representative for the whole sample. *Direct* ownership by ÖIAG (Österreichische Industrieholding Aktiengesellschaft, classified as a nonbank domestic firm) is 49.9%. IPIC, a company from Abu Dhabi, holds 19.6% directly. The rest, 30.5%, is freely circulating on the Vienna stock exchange and classified as direct dispersed ownership. The Republic of Austria does not hold equity directly; however, the state *ultimately* holds 49.9% of OMV AG since it wholly owns ÖIAG. A foreign firm ultimately holds 19.6% of the cash-flow rights, and the 30.5% freely circulating also translates into the same amount of ultimate ownership. Banks and families have neither direct nor indirect holdings. OMV AG is ultimately *controlled* by the Republic of Austria (the LUS) and therefore classified as a state-controlled company, since all stakes in the controlling chain are larger than 25%.

Table 2 exhibits summary statistics of direct and ultimate ownership and of who ultimately controls Austrian firms. The two most important ownership categories are nonbank domestic firms with 37.2% of the equity and foreign firms. Another nonbank domestic firm has a large stake in 100 of the 214 firms. Foreign firms own 32.8% of the equity directly, 35.6% ultimately, and are the largest ultimate shareholders in 80 firms (37.4%). The largest difference between ultimate and direct ownership arises with family-owned firms. While families hold only 8.9% of the shares directly, their holdings increase to 24.6% once indirect shareholdings are included. Families ultimately control 27.1% of the firms.

Ownership concentration is very high in Austria (see table 3). The largest shareholder holds on average 78.5% of equity (median 90%). Only 9.8% of the firms are *not* majority-controlled. Ownership concentration remains high across owner categories. Pyramid structures tend to be simple with one or two large owners at each level. The average pyramid consists of 4.6 levels of companies including the top level (see "Pyr.layers"). The average sample firm is located at layer 3.1 (see "Hierarchy"). Only one quarter of firms are listed on a stock exchange. This makes the sample ideal for testing for cash constraints, since asymmetry of information may be large for unlisted companies.

Table 4 exhibits means and medians of important balance sheet variables. State-controlled firms have significantly smaller cash flow to capital stock ratios, are significantly larger, have lower dividend payout ratios, and lower indebtedness than other firms. Family-owned firms are the smallest. Their high bank-debt-to-total-debt and total-debt-to-total-asset ratios suggest that they fully exploit their credit limits. One indicator of the importance of internal capital markets is group debt, defined as debt owed to other corporations in the same group.[1]) Internal capital markets allocate much more resources in foreign-con-

---

1   According to paragraphs 224 and 225 Handelsgesetzbuch (Commercial Code) and § 224 Rechnungslegungs- gesetz (Financial Reporting Act), i.e. the two main laws governing annual financial statements in Austria, companies are obliged to provide this information. Corporations in the same group are defined as either connected corporations (e.g. subsidiaries) or corporations in which a substantial equity participation exists.

trolled than in family-controlled firms. The mean (median) group-debt-to-total-debt ratios for foreign-controlled firms are 13.0 (9.5) percentage points higher and significantly different from those of the rest of the sample.

4 Regression Analysis

4.1 An Econometric Model of Investment

If the firm maximizes the discounted flow of profits over an infinite horizon absent delivery lags, adjustment costs, and vintage effects, capital depreciates at a geometric rate and assuming a CES production function with σ the constant elasticity of substitution between capital and variable inputs, the relationship between the desired (optimal) capital stock K^*, the level of output Y, and the cost of capital C can be written as

$$K_t^* = \alpha C_t^{-\sigma} Y_t \tag{1}$$

where C is a function of the purchase price of new capital relative to the price of output (see Chirinko, 1993, and Caballero, Engel and Haltiwanger, 1995).

Some authors have argued that net investment is related to a distributed lag on changes in the optimal capital stock to recognize the complexity of the adjustment process.[1]) One may also introduce error-correcting behavior of investment, i.e. investment is likely to be higher if the firm is further away from the desired capital stock and investment spending may be less, ceteris paribus, if the installed capital is viewed as being above the desired level. Since from (1) it is reasonable to assume that K and Y are cointegrated in the long run while adjustment costs may prevent the firm from attaining the target level in the short-run, we will follow that approach next.

Taking logs of (1), denoting logarithms with lower case letters and $a = ln\alpha$, we get

$$k_t^* = a - \sigma c_t + y_t \tag{2}$$

If there are no adjustment costs, k_t^* would be the optimal capital stock for a profit-maximizing firm with a constant-returns-to-scale CES production function. Adjustment processes may be complex, and one way to arrive at a tractable model *and* account for adjustment costs is to nest (2) within an autoregressive-distributed lag model, for example an ADL (1,1) model of the form

$$k_t = \alpha_0 + \alpha_1 k_{t-1} + \beta_0 y_t + \beta_1 y_{t-1} - \varphi_0 c_t - \varphi_1 c_{t-1} + u_t \tag{3}$$

If we further assume that the change in the capital stock can be described by a simple partial adjustment process of the form

$$\Delta k_t = \theta(k_t^* - k_{t-1}) + \varepsilon_t \tag{4}$$

---

1   E.g. Bean (1981), Bond et al. (1999); but see Anderson (1981). For a comparison of different investment models, see Mairesse et al. (1999).

where some constant fraction θ of the gap between the actual and the desired levels of the capital stock is closed in each period, we get the error correction specification as

$$
\begin{aligned}
\Delta k_t = {} & \theta\alpha_0 - \theta(1-\alpha_1)\Delta k_{t-1} + \theta\beta_0\Delta y_t + \theta(\beta_0+\beta_1)\Delta y_{t-1} \\
& - \theta\varphi_0\Delta c_t - \theta(\varphi_0+\varphi_1)\Delta c_{t-1} - \theta(\varphi_0+\varphi_1)c_{t-2} \\
& - \theta(1-\theta\alpha_1)(k_{t-2}-y_{t-2}) + [\theta(\beta_0+\beta_1-(1-\theta\alpha_1)]y_{t-2} + \psi_1
\end{aligned} \tag{5}
$$

with $\psi_t = \theta u_t + \varepsilon_t - \alpha_1\varepsilon_{t-1}$. Assuming again that (5) holds for every firm, that the variation in the user cost of capital can be controlled for by including additive year-specific effects (λ_t) and firm-specific effects (η_i), that s captures y, that the cash-flow terms enter additively, and finally using the approximation that $\Delta k_{it} \approx I_{it}/K_{i,t-1} - \delta_i$, we get the dynamic investment equation

$$
\begin{aligned}
\frac{I^g_{it}}{K_{i,t-1}} = {} & \eta_i + \lambda_t + \rho\frac{I^g_{i,t-1}}{K_{i,t-2}} + v_0\Delta s_{it} + v_1\Delta s_{i,t-1} + \omega(k-s)_{i,t-2} + \phi s_{i,t-2} \\
& + \gamma_0\frac{P_{i,t-1}}{K_{i,t-1}} + \gamma_1\frac{Dep_{i,t-1}}{K_{i,t-1}} + \psi_{it}
\end{aligned} \tag{6}
$$

If $\omega < 0$ error correction leads to more future investment in case of the capital stock being below the desired level, and $\phi = 0_i$ is consistent with long-run constant returns to scale.

Profits and depreciation, the components of cash flow, are supposed to test our predictions as presented in table 1. The main critique of investment-cash flow regressions is that current cash flow may proxy for future investment opportunities and not availability of internal funds (Kaplan and Zingales, 1997).[1] To accommodate that critique, we apply a number of controls in our estimation strategy: Depreciation and profits enter the regression models individually and lagged one period. Depreciation seems less likely to proxy for future investment opportunities. If cash constraints are present, it should not matter whether additional funds come from profits or depreciation, and their coefficients should be equal. With capital stock as a deflator, the firm-specific intercept terms can be interpreted as the constant rates of depreciation. Therefore, if replacement needs are picked up by these fixed firm effects, depreciation is left to serve as a cash-flow variable.[2] Moreover, fixed firm effects subtract firm-specific means from all variables removing all time invariant determinants of firm level investment from (6). Thus, fixed firm effects control for investment opportunities differing systematically across firms, leaving the cash-flow terms to pick up the effects of within firm variation in internal funds on investment.

Additionally, equation (6) is estimated separately for bank-, state-, family-, and foreign-controlled firms. Thus we stress the *differences* in cash-flow coefficients across control categories, which are unbiased estimates of the true

---

1   See also the discussion in Fazzari et al. (2000), and Kaplan and Zingales (2000).
2   Tests for fixed effects are highly significant. A Hausman test indicates that a random effects model would be inappropriate. Our basic results are not changed if we introduce two-digit ISIC industry dummies instead of fixed firm effects. These results are available upon request.

differences. This holds true even if the internal firm variation in cash flow (partially) proxies for future investment opportunities *if* our cash flow measures are *equally* correlated with expected future profits across control categories. We shall present evidence that this is indeed the case in section 4.4.

Equation (6) contains a lagged dependent variable, and OLS (ordinary least squares) would be inconsistent in the presence of unobserved firm-specific effects. Therefore, we estimate (6) by a systems GMM (general method of moments) estimator developed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998). This estimator eliminates firm effects by first-differencing; it also controls for possible endogeneity of current explanatory variables. Endogenous variables lagged two or more periods will be valid instruments provided there is no second-order autocorrelation in the first-differenced idiosyncratic error terms. We present tests for autocorrelations and the Sargan test of overidentifying restrictions in the tables that follow.

4.2 Basic Results

Table 5 presents our estimation results for equation (6), which includes a lagged dependent variable and assumes error-correcting behavior, using Arellano and Bond's one-step GMM estimator. The error-correction term is correctly signed except for state-controlled companies, which do not display error-correcting behavior. There is no evidence of a significant deviation from a constant returns to scale technology, since the two-period lagged sales terms are all insignificant. The Sargan tests do not suggest rejection of the overidentifying restrictions at conventional levels for either control category. Finally, while there is evidence of first order serial correlation in the residuals, the AR(2) test statistics reveal an absence of second order serial correlation in the first differenced errors and thus that the instruments are valid.

In general, the evidence in favor of our hypotheses as outlined in table 1 is very strong. The cash flow-related coefficients of family- and state-controlled firms are significant at the 5% level or better. The cash-flow terms for bank-controlled firms do not attain significance. All control categories display statistically significantly different cash-flow sensitivities from bank-controlled firms. The largest differences in the effect of cash flow on investment are obtained for family-controlled firms.

The results of table 5 suggest that the corporate governance structure of the firm has an important effect on the sensitivity of investment to cash flow. Cash-flow sensitivities consistently vary across control categories. In particular, both family- and state-controlled firms exhibit positive and different sensitivities from bank-controlled firms. Agency theory suggests that cash constraints are responsible for the findings for family-controlled firms, while managerial discretionary spending may explain the investment-cash flow sensitivity for state-controlled firms.

Investment-cash flow regressions face the criticism that current cash flow merely predicts future values of sales or cash flow and thus investment, and is not (only) a flow of funds variable. We tackle this criticism in the next section.

4.3 Does Cash Flow Proxy for Differential Investment Profitability?

This paper has already applied several ways of circumventing the major criticism of using cash flow as a proxy for the internal availability of funds: First, cash flow was divided into its components depreciation and profits, and the individual coefficient estimates compared; second, the components were lagged one period to account for availability and time needed for managerial information processing; third, fixed-firm effects were included to capture firm-specific depreciation rates and investment opportunities, and fourth, *differences* in cash-flow coefficients from the base category bank-controlled firms are more likely to be invariant to future returns on investment.

This section explores this last argument in greater detail. Similar in spirit to Bond et al. (1999), we ask whether cash flow is a *differently* informative predictor of future sales or cash flows across control categories. In particular, our conclusion that family-controlled firms are more likely to be cash-constrained than bank-controlled firms would be undermined if family-controlled firms' cash flows merely better predict future values of sales or cash flow and thus investment. We perform this exercise by estimating a sales and a cash-flow equation. The independent variables in the sales equation include lagged sales and cash-flow terms up to period $t - 2$. Thus a joint test of significance of the cash-flow coefficients in the sales equation can be interpreted as a conventional Granger causality test (see recently Hall et al., 1999). The time series properties of cash flow are explored using an AR(2) process.

Table 6 presents the results. Since both equations contain lagged dependent variables and firm-specific effects, we estimate by Arellano and Bond's one-step *GMM* estimator. We allow all coefficients to differ across control categories by interacting all explanatory variables with dummies indicating the identity of the controlling owner. In the sales equation, the sum of the cash-flow terms of family-controlled firms is *smaller* than the sum of the cash-flow terms of bank-controlled firms. In the cash-flow equation, cash flow does not predict future cash flow differently across control categories. These findings contradict the hypothesis that cash flow proxies better for demand expectations or future profitability of investment for family-controlled firms than for other firms.

5 Conclusions

This paper presents evidence supporting both the managerial discretion and cash constraints hypotheses. The support for each hypothesis is directly related to the governance structure of the firm. Many family-controlled firms appear to suffer from cash constraints. Family owners seem to be unwilling to issue underpriced equity and give up control of the companies they founded to finance investment. In contrast, agents of the state have incentives for short-term asset and employment maximization. They appear to invest their "free cash flow" rather than paying it out to shareholders or citizens. From agency theory this comes as no surprise, since ultimate owners of state-controlled firms (i.e. the citizens) are very weak monitors. Banks as providers of equity appear to improve the governance of companies, since we do not find cash flow-induced investment for bank-controlled firms. A number of robustness checks corroborate these conclusions.

This paper started from the assumption that financial sector development can affect growth mainly via three channels. We presented microeconomic evidence that the financial sector is likely to influence the efficiency with which investment funds are allocated to investment projects. We stress that there exist important differences in the efficiency of investment across types of firms. We find that some firms potentially underinvest and at the same time in a given country, some firms potentially overinvest. Thus, *underinvesting* firms should get more liquid funds for investment and *overinvesting* firms should be constrained in their discretionary use of funds. Financial regulatory bodies should keep this in mind in the course of European capital market reform.

References

Anderson, G. J. (1981). A New Approach to the Empirical Investigation of Investment Expenditures. In: The Economic Journal, 91, 88–103.

Arellano, M., Bond, S. R. (1991). Some Tests of Specification of Panel Data: Monte Carlo Evidence and an Application to Employment Equations. In: Review of Economic Studies, 58, 277–297.

Arellano, M., Bover, O. (1995). Another Look at the Instrumental-Variable Estimation of Error Component Models. In: Journal of Econometrics, 68, 29–52.

Barca, F., Becht, M. (2001). Ownership and Voting Power in Europe, Oxford University Press.

Baumol, W. J. (1959). Business Behavior, Value and Growth, Macmillan, New York.

Baumol, W. J., Heim, P., Malkiel, B. G., Quandt, R. E. (1970). Earnings Retentions, New Capital and the Growth of the Firm. In: Review of Economics and Statistics 52, 345–355.

Bean, C. R. (1981). An Econometric Model of Manufacturing Investment in the UK. In: The Economic Journal, 91, 106–121.

Berle, A., Means, G. (1932). The Modern Corporation and Private Property. New York, World Inc.

Blundell, R., Bond, S. R. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. In: Journal of Econometrics, 87, 115–143.

Boehmer, E. (1998). Who Controls Germany? An empirical assessment. WP, Humboldt University.

Bond, S., Elston, J., Mairesse, J., Mulkay, B. (1997). Financial Factors and Investment in Belgium, France, Germany and the UK: A Comparison Using Company Panel Data. In: NBER WP No. 5900.

Bond, S., Harhoff, D., Reenen, J. Van (1999). Investment, R&D and Financial Constraints in Britain and Germany, IFS Working Paper W 99/05.

Bond, S., Meghir, C. (1994). Dynamic Investment Models and the Firm's Financial Policy. In: Review of Economic Studies 61 (2), 197–222.

Caballero, R., Engel, E., Haltiwanger, J. (1995). Plant-level Adjustment Dynamics and Aggregate Investment Dynamics. In: Brookings Papers on Economic Activity (2), 1–54.

Carpenter, R. E. (1995). Finance Constraints or Free Cash Flow? In: Empirica 22, 185–209.

Chandler, A. D., Jr. (1990). Scale and Scope: The Dynamics of Industrial Capitalism. In: The Belknap Press of Harvard University Press, Cambridge, Massachusetts.

Chirinko, R. S. (1993). Business Fixed Investment Spending: Modeling Strategies, Empirical Results, and Policy Implications. In: Journal of Economic Literature, 1875-1911.

Cook, R. D. (1977). Detection of Influential Observations in Linear Regression. In: Technometrics 19, 15–18.

De Long, J. B. (1990). Did J. P. Morgan's Men Add Value? An Economist's Perspective on Financial Capitalism, Harvard University.

Demirguc-Kunt, A., Levine, R. (2001). Financial Structure and Economic Growth. A Cross-Country Comparison of Banks, Markets and Development. Cambridge, MIT Press.

Edwards, J., Fischer, K. (1994). Banks, Finance, and Investment in Germany. In: Cambridge University Press.

Elston, J. (1993). Firm Ownership Structure and Investment: Theory and Evidence from German Panel Data. Wissenschaftszentrum Berlin.

Fazzari, S. M., Hubbard, R. G., Petersen, B. C. (1988). Financing Constraints and Corporate Investment. In: Brookings Papers on Economic Activity, 141–206.

Fazzari, S. M., Hubbard, R. G., Petersen, B. C. (2000). Investment-Cash Flow Sensitivities are Useful: A Comment on Kaplan and Zingales. In: Quarterly Journal of Economics, May, 695–705.

Franks, J., Mayer, C. (1997). Ownership, Control, and the Performance of German Corporations. London Business School and University of Oxford.

Gertner, R., Scharfstein, D., Stein, J. (1994). Internal versus External Capital Markets. In: Quarterly Journal of Economics CIX, 1211–1230.

Gilchrist, S., Himmelberg, C. P. (1995). Evidence on the Role of Cash Flow in Reduced-Form Investment Equations. In: Journal of Monetary Economics, 36, 541–572.

Grabowski, H. G., Mueller, D. C. (1972). Managerial and Stockholder Welfare Models of Firm Expenditures. In: Review of Economics and Statistics 54, 9–24.

Grabowski, H. G., Mueller, D. C. (1975). Life Cycle Effects on Corporate Returns on Retentions. In: Review of Economics and Statistics 57 (4), 400–409.

Greene, W. H. (1997). Econometric Analysis, Prentice Hall, New Jersey.

Grossman, S., Hart, O. (1980). Takeover Bids, the Free-Rider Problem, and the Theory of the Corporation. In: Bell Journal of Economics, 11, 42–64.

Guariglia, A. (1999). The Effects of Financial Constraints on Inventory Investment: Evidence from a Panel of UK Firms. In: Economica, 66, 43–62.

Gugler, K., Mueller, D. C., Yurtoglu, B. B. (1999). Marginal Q, Average Q, Cash Flow and Investment. WP University of Vienna.

Gugler, K. (ed.) (2001). Corporate Governance and Economic Performance. In: Oxford University Press.

Gugler, K. (2002). Corporate Governance, Dividend Pay-Out Policy, and the Interrelation Between Dividends, R&D, and Capital Investment. Forthcoming Journal of Banking and Finance.

Gugler, K., Kalss, S., Stomper, A., Zechner, J. (2001). The Separation of Ownership and Control: An Austrian Perspective. In: Barca, F. and M. Becht (eds.). The Control of Corporate Europe. Oxford University Press.

Hadlock, C. J. (1998). Ownership, Liquidity, and Investment. In: Rand Journal of Economics, Vol. 29, No. 3, 487–508.

Hall, B. H., Mairesse, J., Branstetter, L., Crepon, B. (1999). Does Cash Flow Cause Investment and R&D: An Exploration Using Panel Data for French, Japanese, and United States Scientific Firms. In: Audretsch, D., Thurik, R. (eds.). Innovation, Industry Evolution, and Employment. Cambridge University Press, 129–156.

Hausman, J. (1978). Specification Tests in Econometrics. In: Econometrica, 46, 1251–1271.

Himmelberg, C. P., Petersen, B. C. (1994). R&D and Internal Finance: A Panel Study of Small Firms in High-Tech Industries. In: Review of Economics and Statistics, 76(1), 38–51.

Hoshi, T., Kashyap, A., Scharfstein, D. (1990). The Role of Banks in Reducing the Costs of Financial Distress in Japan. In: Journal of Financial Economics 27, 67–88.

Hoshi, T., Kashyap, A., Scharfstein, D. (1991). Corporate Structure, Liquidity, and Investment: Evidence from Japanese Industrial Groups. In: Quarterly Journal of Economics, 33–60.

Hubbard, R. G. (1998). Capital-Market Imperfections and Investment. In: Journal of Economic Literature, Vol. XXXVI, 193–225.

Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. In: American Economic Association, Papers and Proceedings, 323–329.

Jensen, M. C., Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. In: Journal of Financial Economics 3, 305—360.

Jud, W. (1993). Institutional Investors and Corporate Governance: The Austrian View. In: Baums, T. (ed.), Institutional Investors and Corporate Governance, Berlin, deGruyter, New York.

Kadapakkam, P. R., Kumar, P. C., Riddick, L. A. (1998). The Impact of Cash Flows and Firm Size on Investment: The International Evidence. In: Journal of Banking and Finance 22, 293—320.

Kaplan, S. N., Zingales, L. (1997). Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints? In: Quarterly Journal of Economics, Vol. CXII, 169—215.

Kaplan, S. N., Zingales, L. (2000). Investment-Cash Flow Sensitivities are not Valid Measures of Financing Constraints. In: Quarterly Journal of Economics, May, 707—712.

Kathuria, R., Mueller, D. C. (1995). Investment and Cash Flow: Asymmetric Information or Managerial Discretion? In: Empirica 22, 211—234.

King, R. G., Levine, R. (1993). Finance, Entrepreneurship, and Growth. In: Journal of Monetary Economics 32, 513—542.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (1997). Legal Determinants of External Finance. In: The Journal of Finance, Vol. LII, No. 3, 1131—1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (1999). Corporate Ownership Around the World. In: The Journal of Finance, Vol. LIV, No. 2, 471—517.

Mairesse, J., Mulkay, B., Hall, B. H. (1999). Firm-Level Investment in France and the United States: An Exploration of What We Have Learned in Twenty Years. In: NBER WP No. 7437.

Marris, R. (1963). A Model of the ''Managerial'' Enterprise. In: Quarterly Journal of Economics 77, 185—209.

Marris, R. (1964). The Economic Theory of Managerial Capitalism. Free Press, Glencoe.

Marris, R. (1998). Managerial Capitalism in Retrospect. Macmillan, London.

Mathis, F. (1990). Big Business in Österreich II, Verlag für Geschichte und Politik, Oldenbourg.

Modigliani, F., Miller, M. H. (1958). The Cost of Capital, Corporation Finance, and the Theory of Investment. In: American Economic Review, 48(3), 261—297.

Mueller, D. C. (1972). A Life Cycle Theory of the Firm. In: Journal of Industrial Economics 20, 199—219.

Mueller, D. C. (1986). Profits in the Long Run. In: Cambridge University Press.

Mueller, D. C., Reardon, E. (1993). Rates of Return on Investment. In: Southern Economic Journal, 60, 430—453.

Mueller, D. C. (1998). The Goals of Corporate Actors, University of Vienna, mimeo.

Mulkay, B., Hall, B. H., Mairesse, J. (2000). Firm Level Investment and R&D in France and the United States: A Comparison. In: NBER WP No. 8038.

Myers, S. C., Majluf, N. S. (1984). Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. In: Journal of Financial Economics 13, 187-221.

Nickell, S., Nicolitsas, D. (1999). How Does Financial Pressure Affect Firms. In: European Economic Review 43, 1435—1456.

Oliner, S. D., Rudebusch, G. D. (1992). Sources of Financing Hierarchy for Business Investment. In: Review of Economics and Statistics, Vol. LXXIV, No. 4, 643—654.

Prowse, S. D. (1990). Institutional Investment Patterns and Corporate Financial Behavior in the United States and Japan. In: Journal of Financial Economics, 27(1), 43—66.

Prowse, S. D. (1992). The Structure of Corporate Ownership in Japan. In: The Journal of Finance, Vol. XLVII, No. 3, 1121—1140.

Prowse, S. D. (1994). Corporate Governance in an International Perspective: A Survey of Corporate Control Mechanisms Among Large Firms in the United States, the United Kingdom, Japan, and Germany. In: BIS Economic Papers, No. 41.

Rajan, R. G., Zingales, L. (1998). Financial Dependence and Growth. In: American Economic Review 88, 559–587.

Salinger, M. A., Summers, L. H. (1983). Tax Reform and Corporate Investment: A Microeconometric Simulation Study. In: Feldstein, M. S. (ed.), Behavioral Simulation Methods in Tax Policy Analysis, Chicago: University of Chicago Press (for the NBER), 247–273.

Shinnar, R., Dressler, O., Feng, C., Avidan, A. (1989). Estimation of the Economic Rate of Return for Industrial Companies. In: Journal of Business, Vol. 62, No. 3, 417–445.

Shleifer, A., Vishny, R. W. (1997). A Survey of Corporate Governance. In: The Journal of Finance, 52, 737–783.

Stein, J. C. (2001). Agency, Information and Corporate Investment. In: NBER Working Paper No. 8342.

Stiglitz, J., Weiss, M. (1981). Credit Rationing in Markets with Imperfect Information. In: American Economic Review, Vol. 71, 393–410.

White, H. (1980). A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity. In: Econometrica Vol. 48, No. 4, 817-838.

Williamson, O. E. (1963). Management Discretion and Business Behavior. In: American Economic Review 53, 1032-1057.

Annex

Chart 1

Cash Constraints and Managerial Discretion
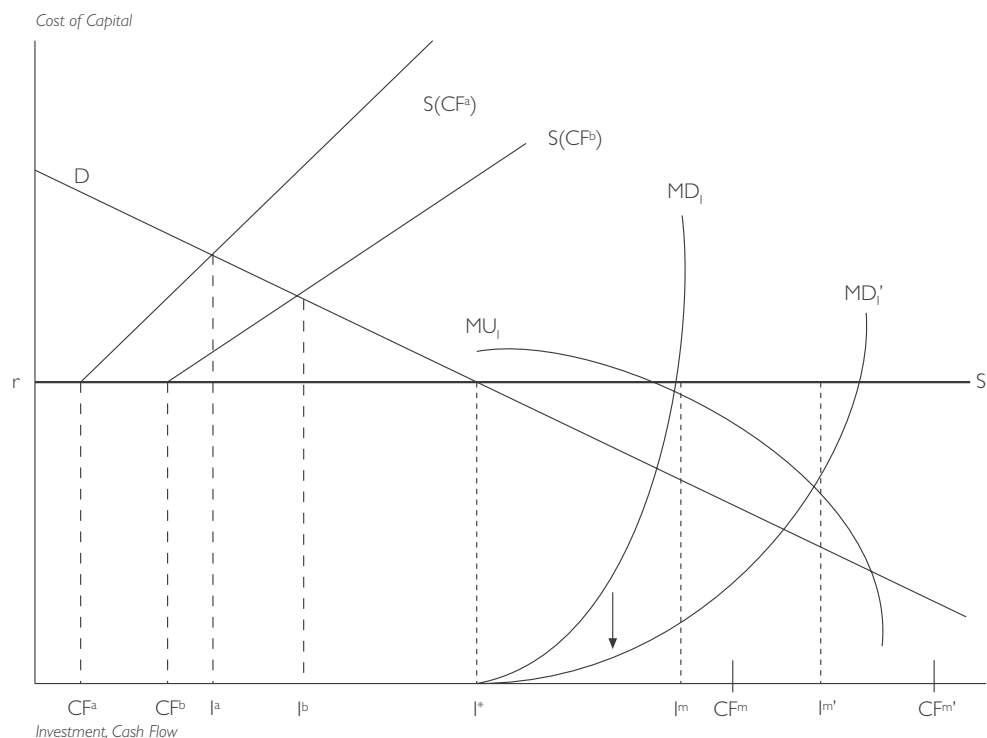
Chart 2

Ownership and Control Structure of OMV AG

Layer m=1: ("Hierarchy"=1)	Republic of Austria	Foreign Owners	Dispersed Holdings

100%   100%

Layer m−1: ("Hierarchy"=2)	ÖIAG	IPIC

49.9%   19.6%   30.5%

Layer m=3: ("Hierarchy"=3)   OMV AG
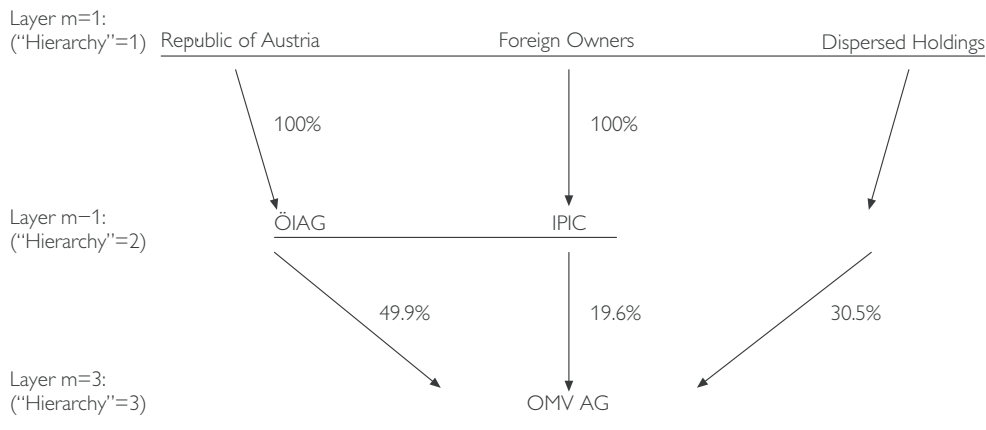
Table 1

Predictions about Cash-Flow Coefficients

Identity of Large and Controlling Owner	The Cash Constraints Hypothesis	The Managerial Discretion Hypothesis
Banks	0	0
State	0	+
Family	+	0
Foreign firms	?	?

Note: A "0" means that we predict a zero cash-flow coefficient and, therefore, that the hypothesis is not valid for the respective subsample of firms, a "+" means that the prediction is a positive and significant cash-flow coefficient and that the hypothesis is valid for the respective subsample of firms, and a "?" means an indeterminate prediction.

Table 2

Who Controls Austria?

(Number of firms where stake of respective category is positive in parentheses)

	Banks	State	Family	Foreign Firms	Nonbank domestic firms	Dispersed owners
Direct Ownership[1]	5.2	8.7	8.9	32.8	37.2	7.4
(Percent of total equity)	(23)	(23)	(33)	(90)	(100)	(58)
Ultimate Ownership[1]	8.7	17.6	24.6	35.6	−	13.3
(Percent of total equity)	(40)	(55)	(68)	(98)	−	(80)
Largest Ultimate Shareholder[1]	14.5	21.0	27.1	37.4	−	−
(Percent of firms)	(31)	(45)	(58)	(80)	−	−

[1] *Sample A: 214 firms.*

Table 3

Ownership Concentration and Pyramiding

	Ownership concentration			Pyramiding		Percent listed
	Stake 1 (%)	Stake 2 (%)	Stake 3 (%)	Pyr. layers	Hierarchy	
ALL (214)	78.5	11.3	1.6	4.6	3.1	24.6
Bank-controlled firms (31)	63.4	20.2	3.6	5.3	3.0	35.5
State-controlled firms (45)	77.7	9.3	0.6	4.7	3.1	17.8
Family-controlled firms (58)	74.3	12.1	3.2	4.0	3.1	24.1
Foreign-controlled firms (80)	87.8	8.5	0.9	3.4	2.5	11.3

[1]) Note: "Pyr.layers" and "Hierarchy" for foreign-controlled firms are not literally comparable to the other categories since we do not know the ultimate owners of these foreign firms. Stake 1, 2, 3 ... Largest second, third average stake. Pyr.layers ... Average of total number of layers in the pyramid. Hierarchy ... Average of hierarchical layers of the sample firm.

Table 4

Means and Medians of Annual Values

Control	All[1])	Banks	State	Family	Foreign
No. of firms	214	31	45	58	80
Total Sales in ATS million					
Mean	2,680	2,007 (a)	4,638 (a)	1,467 (a)	2,720 ( )
Median	1,325	1,281 ( )	2,776 (b)	1,103 (b)	1,245 ( )
Number of Employees					
Mean	1,050	1,113 ( )	1,480 (a)	766 (a)	990 ( )
Median	673	689 ( )	1,075 (b)	570 (b)	571 (b)
Sales Growth Rate (%)					
Mean	4.0	2.2 ( )	4.8 ( )	5.0 ( )	3.5 ( )
Median	2.1	1.6 ( )	3.1 ( )	1.8 ( )	1.9 ( )
I/K (%)					
Mean	21.5	23.7 (a)	13.0 (a)	21.0 ( )	25.9 (a)
Median	19.1	23.0 (b)	10.6 (b)	19.1 ( )	23.1 (b)
CF/K (%)					
Mean	34.8	27.2 (a)	25.5 (a)	29.7 (a)	46.8 (a)
Median	27.8	26.7 ( )	11.1 (b)	27.3 ( )	36.9 (b)
Div/CF (%)					
Mean	16.2	17.4 ( )	12.9 (a)	10.4 (a)	21.9 (a)
Median	12.5	14.1 ( )	10.0 (b)	9.2 (b)	17.6 (b)
Bank Debt/Total Debt (%)					
Mean	41.8	36.5 (a)	52.2 (a)	53.0 (a)	29.8 (a)
Median	44.8	29.6 (b)	61.5 (b)	59.5 (b)	26.8 (b)
Group Debt/Total Debt (%)					
Mean	13.8	12.6 ( )	12.5 ( )	6.9 (a)	19.9 (a)
Median	5.5	6.0 ( )	2.0 (b)	2.4 (b)	11.9 (b)
Total Debt/Total Assets (%)					
Mean	45.6	47.5 ( )	42.1 (a)	51.3 (a)	42.8 (a)
Median	46.4	47.1 ( )	42.0 (b)	52.1 (b)	44.2 (b)

[1]) 214 firms 1991 to 1999.
Variables: Total Sales ... annual total sales, Number of Employees ... annual average of total number of employees, Sales Growth Rate ... annual growth rates of total sales; I ... investment in physical capital; K ... capital stock obtained by applying a perpetual inventory method; CF... cash flow; Div ... dividend payments; Bank Debt ... debt owed to banks irrespective of term at the date of balance, Group Debt ... debt owed to other corporations in the same group irrespective of term at the date of balance, Total Debt ... total debt of the firm irrespective of term at the date of balance, Total Assets ... total assets at the date of balance.
Comparison tests: (a) ... Mean of respective subsample is significantly different (at least at the 5% level) to the mean of the other firms, respectively. (b) ... Sample is from population with a significantly different (at least at the 5% level) distribution than the sample of the other firms, respectively (Wilcoxon rank sum test). () No significant difference.

Table 5

GMM Estimates for Equation 6

(z-values in parentheses)

Control/Independent Variables	All	Banks	State	Family	Foreign
$I^g_{i,t-1}/K_{i,t-2}$	0.206	−0.14	0.16	0.122	0.249
	(4.24)***	(0.73)	(1.63)	(1.17)	(2.94)***
Δs_{it}	0.054	0.080	0.060	0.090	0.055
	(3.25)***	(0.92)	(2.15)**	(2.49)**	(2.96)***
$\Delta s_{i,t-1}$	0.036	0.150	0.008	0.014	0.057
	(1.25)	(1.99)**	(0.55)	(1.68)*	(2.07)**
$(k-s)_{i,t-2}$	−0.013	−0.080	0.014	−0.060	−0.095
	(2.18)**	(1.88)*	(0.66)	(1.83)*	(2.47)**
$s_{i,t-2}$	−0.000	−0.07	0.061	−0.028	−0.038
	(0.01)	(0.80)	(1.55)	(0.67)	(0.90)
$P_{i,t-1}/K_{i,t-1}$	0.054	−0.051	0.071	0.195	0.020
	(2.38)**	(0.70)	(2.56)**	(4.64)***	(1.10)
$Dep_{i,t-1}/K_{i,t-1}$	0.060	−0.034	0.090	0.226	0.180
	(3.43)***	(0.42)	(3.95)***	(2.85)***	(3.24)***
Number of firms	214	31	45	58	80
Number of observations	1,208	176	246	331	455
Waldtest of joint significance of CF coefficients	$X^2(1)$=11.75***	$X^2(1)$=0.28	$X^2(1)$= 23.70***	$X^2(1)$= 14.31***	$X^2(1)$= 3.95**
Difference of CF coefficient(s) from bank-controlled firms[1]	–	–	0.12***	0.25***	0.11***
Sargan test	0.20	0.45	0.32	0.24	0.22
AR (1)	0.00	0.00	0.00	0.00	0.00
AR (2)	0.77	0.79	0.11	0.68	0.58

[1] Estimated differences and Waldtests in this row are from the pooled regression with interaction terms for all explanatory variables with all control categories, and constraining the profits and depreciation coefficient to be equal for each control category.

Note: All regressions include a full set of time dummies. The estimation method is one-step GMM. This method eliminates firm fixed effects by first differencing. "Sargan test" is the p-value of a Sargan-Hansen test of overidentifying restrictions; AR(k) is the p-value of a test that the average autocovariance in residuals of order k is zero. Instruments include lagged levels of the dependent and the predetermined variables dated t-2 or earlier, i.e. instruments begin with $I^g_{i,t-2}/K_{i,t-3}, \Delta s_{i,t-2}, s_{i,t-2}, (k-s)_{i,t-3}, P_{i,t-2}/K_{i,t-2}, Dep_{i,t-2}/K_{i,t-2}$.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Table 6

Does Cash Flow Proxy Differently for the Future Profitability of Investment?

Dependent variable	S_{it}		$(CF/K)_{it}$	
Independent Variables	Coefficient	z-value	Coefficient	z-value
$s_{i,t-1} * DBA$	0.752	5.85		
$s_{i,t-2} * DBA$	−0.201	−2.33		
$s_{i,t-1} * DST$	0.581	4.53		
$s_{i,t-2} * DST$	−0.037	−0.32		
$s_{i,t-1} * DFAM$	0.674	6.55		
$s_{i,t-2} * DFAM$	−0.139	−1.48		
$s_{i,t-1} * DFF$	0.447	2.84		
$s_{i,t-2} * DFF$	0.149	1.41		
$(CF/K)_{i,t-1} * DBA$	0.109	1.70	0.256	2.11
$(CF/K)_{i,t-2} * DBA$	0.044	0.61	−0.020	−0.20
$(CF/K)_{i,t-1} * DST$	0.141	2.08	0.115	0.51
$(CF/K)_{i,t-2} * DST$	0.027	0.37	0.286	1.85
$(CF/K)_{i,t-1} * DFAM$	0.079	1.79	0.507	2.39
$(CF/K)_{i,t-2} * DFAM$	−0.026	−0.46	−0.092	−0.61
$(CF/K)_{i,t-1} * DFF$	−0.009	−0.28	−0.474	−0.99
$(CF/K)_{i,t-2} * DFF$	−0.061	−1.29	0.289	1.25
Number of firms	214		214	
Number of observations	1,208		1,208	
Waldtest of joint significance of CF coefficients:				
Bank control	2.40		3.13*	
State control	5.29**		5.99**	
Family control	0.88		4.04**	
Foreign control	1.14		0.13	
Wald test of difference of CF coefficients from bank-controlled firms:				
State control	0.01		0.64	
Family control	0.79		0.55	
Foreign control	3.49*		1.04	

Note: The dependent variables are the logarithm of sales and the cash flow to capital stock ratio, respectively. DBA, DST, DFAM and DFF are dummies equal to one, if a bank, the state, a family or a foreign firm is the largest ultimate shareholder, zero else. All regressions include a full set of time dummies. The estimation method is one-step GMM. This method eliminates firm fixed effects by first differencing. Sargan tests do not reject overidentifying restrictions and autocorrelation tests do not detect second order serial correlation in the first-differenced residuals. Instruments include lagged levels of the right hand-side variables dated t-3 or earlier.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

"Finance for Growth" Panel Discussion: What Kind of Financial System Works Best for Europe?

Franz Hahn
(Austrian Institute
of Economic Research),
Peter Mooslechner
(OeNB),
Engelbert Stockhammer
(Vienna University
of Economics
and Business
Administration)

Moderator: Martin Schürz

Ladies and gentlemen, the question to the panel is: What kind of financial system works best for Europe?

Please share your views on the sort of financial system you consider adequate for Europe. What problems can we expect a financial system to solve? Are regulatory frameworks in Europe well equipped to cope with the growing market orientation of financial systems?

Engelbert Stockhammer

Principally, I consider "functional efficiency" (James Tobin) to be the key purpose of a financial system. In other words, what matters is how efficiently capital is allocated for investment. On a more general note, I would like to offer some ideas on how the goals of the financial system should tie in with overall economic policy objectives.

Different financial systems tend to have different distribution effects, which should be adequately reflected in the design of economic policy. What is important in this respect is that there has been a big change in the functional distribution of income between wages, profits, rents and interest income on financial capital.

Household income is a case in point. Interest and dividend income of households as a share of household income has risen strongly across countries. In western Germany, it rose from 2% in the 1960s to roughly 7% in the mid-1990s. In the United States, it climbed from 9% in the 1960s to 14% in the mid-1990s.

Turning to the share of the financial sector's operating surplus (based on national accounts data) in profits, we see that it has also increased visibly during the same period. Again, there are marked differences among countries. In Germany this ratio rose from 3% in the 1960s to 7% in the 1990s; in the United States it jumped from 30% to close to 50%.

While I do not wish to imply that a fair income distribution should be an explicit goal of financial system design, I believe that the distribution effect of the various financial systems and structures does represent an important aspect.

Going beyond the key purpose of a financial system, another important issue is what kind of financial system is compatible with active national economic policies. Robert Pollin has argued that national economic policies are easier to implement in bank-dominated financial systems, as banks can be influenced more readily than financial markets. Beyond the need to provide functional efficiency and to solve information and incentive problems, I would rate a good fit with national economic polices to be a requirement for financial systems.

As to whether regulatory frameworks in Europe are well equipped to cope with the growing market orientation of financial systems, let me quote Minsky, who stated that financial markets are naturally unstable and that it therefore takes government involvement – "Big Government" in Minsky's words – to stabilize the economy. Basically, it takes a sector that is comparatively immune to pressure on the financial sector and thus in a position to contain crisis situations. This ties in with the evidence presented by Franz Hahn: government consumption dampens macroeconomic volatility. It follows that, if we accept the deregulation and liberalization of financial sectors in Europe, we would at

the same time need to reinforce governments' fiscal functions to enable them to effectively deal with prospective financial turbulences.

Peter Mooslechner

Much as I agree with Engelbert Stockhammer on the significance of functional efficiency, I believe that, in order to be viable in the future, a financial system will have to address multidimensional functions. In other words, simply prioritizing functions will no longer be enough. Much like economic policies, financial systems may have to be designed to optimize multiple goals; otherwise the sheer variety of objectives and possible solutions might simply become unmanageable. Existing financial systems have, of course, evolved against widely differing backdrops. Even leaving aside the debate pitching the Anglo-American system against the continental European system, it is a tall order to put forward a proposition for a financial system for Europe as a whole, given the strong regional differences that exist within the European continent. After all, the financial structures and functions needed in a country such as Austria, where the capital market is underdeveloped, will differ from those required in, say, France or the Netherlands.

There is a danger that we expect too much of financial systems, or that financial systems control too much in an economy. At any rate, I would consider sudden sweeping systemic changes to be basically unfavorable, which is why such steps should be avoided. An important issue linked with the evolution of an economy and its degree of economic development is a sharp rise in company size coupled with a high turnover rate of businesses (owing to changes in ownership, insolvency, etc.). Assuming that we can adequately pin down the requirements in the first place, which financial systems deliver best? How, for instance, can differences in preferences across (continental) Europe be reflected? What can be done about a financial system under which the use of risk capital has evidently been promoted for 20, 30 years at a huge cost for a small overall gain?

Ultimately, the preferences of the business sector are equally problematic. Can we actually blame companies for failing to invest their internal funds adequately? This is more or less one of the conclusions at which Hahn arrives in his paper when stating that the best way to use these funds would for one (kind of) company be to invest less, but for another to invest more – which implies that in different cases it takes significantly different investment decisions to produce the best result.

In my opinion, a financial system that we would consider capable of producing optimum results would, overall, control too much in an economy. Perhaps we should concentrate on letting financial markets execute their multidimensional functions within "safety margins" rather than seek an optimum, and perhaps our steering efforts should above all be aimed at generally avoiding negative effects on the economy.

Franz Hahn

I consider the difference between the Anglo-American financial system and the continental European system to be overrated. When it comes to the function of financing, there are no truly relevant differences: in both systems internal

financing plays the key role, and the differences that exist in external financing reflect above all regulatory differences. Basically, U.S. companies tend to tap the bond market, whereas their continental European counterparts will in most cases take out bank loans.

I see the primary role of financial markets in allocating and diversifying risk. When risks are concentrated or when financial intermediaries or the private sector (households, businesses) have assumed too many risks, they will want to diversify these risks – which is something they can do on markets as long as the risks are idiosyncratic.

Particularly in the field of pension provision, many governments appear to be shedding their traditional insurance function, thereby transferring the underlying risks to the private sector. While under the pay-as-you-go system, the state, being the pension provider, also had to bear funding risks, it has now transferred those risks to households. Now it is increasingly up to individuals to minimize these risks through reallocation.

In this process financial markets are gaining importance as markets for risks because banks – under the effect of deregulation, financial innovations and increased competition – are keen on de-allocating the risks they assume. This holds true also (or even more so) for European banks, which implies that in Europe financial markets stand to gain the kind of position they already have in the United States.

Finally, let me briefly comment on why the Austrian stock market is so underdeveloped. The root cause is not a scarcity of demand but a scarcity of supply. Austrian businesses are mostly family-run and as such have specific governance structures that shut out any influence of outsiders. Family-run businesses do not have an interest in a functioning, liquid stock market; for similar reasons they also reduce the influence of the banks from which they borrow by providing sufficient collateral.

Peter Mooslechner

Financial systems have, at certain points in history, provided congruent functions, for instance combining the functions of risk allocation and funding, thus causing basic financing instruments to evolve the very way they have. But what was the underlying economic rationale, or what might have been the rationale? Taking the huge investments made in canals or railways as an example, for real investors it was of course a matter of survival to have long-term funding at their disposal. Otherwise they would never have been able to implement these projects. This implies that investors were prepared to accept a mechanism that unambiguously allocated risks from the moment the money was put up. In other words, a system was created that provided the necessary funding while, congruently, providing for a reliable system of risk allocation.

As financial markets developed and additional functions were added, this congruence weakened or even became dissociated. Today the initial elements and the many new elements that have been added build a loose network whose underlying systematic relations have become all but blurred. In continental Europe in general and in Austria in particular, the government has broadly filled this gap. Thus an implicit risk allocation has evolved between the state and financial market agents, partly as a result of regulatory measures, partly as a

result of investor and borrower preferences. It should be noted that, measured by the efficiency with which financial markets fulfilled their financing function, notably Germany and Austria fared quite well with this setup for decades. However, we may now have arrived at a point where – for whatever reasons – this implicit compromise no longer works and is no longer considered acceptable. After all, it was not a foregone conclusion for rich investors to risk putting their money in investment projects even when funding and risk allocation functions were congruent.

Just like at the time a compromise in risk allocation had to be sought between the state and private investors in the first place, today the debate appears to be so difficult because an encompassing substitute must be found for the erstwhile compromise, in a wide range of areas, including pension provision. Above all, however, such a substitute is necessary for the efficiency of the financial system as a whole, for the efficiency of prudential supervision and for the sake of financial stability. Having to safeguard financial stability significantly adds to the difficulty, because financial stability is definitely a public good that cannot be secured efficiently by private efforts alone.

For a long time attempts were made to gloss over the public-good problem of financial stability – and many another problem – with Coase-type solutions. The recommendation to establish extensive derivatives markets may be the most notable example. However, the lesson we learned was that this did not solve the problems at hand; such an approach may even have created additional problems.

However, if policymakers were to jump to the conclusion now that the financing function – that is, functional efficiency – should prevail, there is still the danger that, for instance, underlying governance inefficiencies might exert a negative influence on the system, which might, in turn, adversely affect the financing function. We do, however, appear to have learned one lesson from the more recent past, as conclusively evidenced by Engelbert Stockhammer: The attempted concentration on shareholder value has shown that it is highly problematic to limit the financial market perspective to a single aspect, to a single function of the financial market.

Franz Hahn

If we look at the transfer of risks originally borne by the state to households: Could we not see this as part of the way societies tend to evolve? Why should enlightened citizens accept to be patronized, say, when it comes to how they provide for retirement? And there is even more to that: While the state can transfer risks to households, the financial markets – on which only idiosyncratic risks can be diversified – are by definition not capable of efficiently distributing systemic risks. Such risks are, however, the kind that ultimately matter. Should the private pension provision system be shaken by large systemic risks, the state must and will come to the rescue under political pressure and compensate the losses, at least to some extent. By bailing out beneficiaries, the state thus acts as an anchor, as it would, in fact, in any public crisis. Which begs the question: so what?

Turning to the proposition made by Peter Mooslechner regarding the multifunctionality of the financial system, I believe that, at the end of the day, there are only two relevant functions that modern financial markets can fulfill, namely

the financing function and the risk allocation function. While the governance function is often attributed to financial markets, I do not see it as a key function. In all businesses the governance structure is shaped by insiders who are leaning toward instrumentalizing outsiders. Outsiders tend to be aware of this; they know that, unless in exceptional cases, they will not be able to exert any effective influence on businesses. If they are rational, they will understand that they are at a structural disadvantage to insiders (managers, owners) when it comes to information, power and profit possibilities. This explains the predilection of rational investors, notably rational institutional stockholders, for short-term investment. And it also sheds light on banks' behavior in East Asia or Russia in the second half of the 1990s. Given big power and information asymmetries (which usually exist in international loan transactions), banks will, as a rule, invest short-term in order to retain their chances of profit-taking or of leaving an unsafe market fast in case of danger. Which leads me to say that, among the functions of financial markets, there is nothing that would warrant the label "governance."

Financial stability – and here I say something that is not politically correct – is generally overrated. To paraphrase Stigler, regulation has typically served the interests of the banks they regulate. The Basel II accord is a case in point. Basel II materially advances the interests of bank managers, specifically the managers of the larger banks (smaller banks' managers know that Basel II raises the likelihood of a hostile takeover). The logic of Basel II implies: the more regulatory capital a bank has, the safer the position of its management is, i.e. the less efforts the managers will have to make. This is the tradeoff that Basel II facilitates. The more stable a bank is, the greater the inefficiency it will get away with is. While too much stability tends to be fatal for financial markets in general, and for banks in particular, financial crises, or the increasing likelihood of crisis, may have a beneficial effect. Take for instance Finland or Scandinavia, which plunged into a severe crisis at the beginning of the 1990s but now have a remarkable economic performance. Of course I do not know whether such a strong performance is inextricably linked with financial markets' proneness to crisis, but a minor incident of crisis would certainly do no harm to the reform process and the restructuring of the Austrian financial market.

Engelbert Stockhammer

It is a mere historical fact but nonetheless important to stress that a financial system is a product of the society it serves and a framework of institutions. This setup can, of course, be changed, but it takes a genuine will to change. For change to be effected, it takes a political will to change, because after all this is a distribution issue where a balance must be struck between interest groups. Mind you, I do not wish to belittle the significance of the risk allocation function of financial systems; I simply want to add that financial systems have implications for the distribution of incomes.

Apparently, however, there are distribution matters that are not normally put at issue in economic theory. We have become so used to talking about allocation and not about distribution that we are at a loss for concepts with which to debate issues of distribution.

I agree that the state, if adequately empowered, may get things wrong, as has happened often enough. However, the mistake that has been made in many a financial sector reform was to put governments into a straitjacket, squeezing their room for maneuver. Going beyond economic theory, in a democratic setup it is simply not desirable to deprive the state of control functions in deregulated financial markets and to bank on financial markets' ability to regulate themselves. To me such an approach appears unreasonable and undemocratic. Therefore I would insist that governments must retain the possibility to take corrective action. This has come to the fore in the debate on strengthening the global financial architecture, and this is naturally a driving force behind the IMF's intention to create an international bankruptcy procedure, thus basically creating room for maneuver for governments.

Another issue is how much government should spend as a share of GDP to combat financial crises. My guess is that a government spending ratio like that of the U.S.A. suffices to cushion financial markets against relatively many shocks.

Like Franz Hahn, I am surprised how little happens these days when stock prices fall. This observation must not be used, however, as an argument in the debate on shifting pension provision away from the government toward the private sector. Following a switch to private pension provision, stock price changes would certainly entail real effects as the incomes of many people would then be affected directly by valuation changes of the assets they have built up.

Franz Hahn

Responding to the argument put forth by Stefan Schulmeister that stock market prices have nothing to do with fundamentals, I agree that they have actually nothing to do with static fundamentals. But they do not need to. Much rather, price developments imply expectations of future fundamentals, which may materialize or not. In other words, asset prices reflect expectations, which may be well-founded or far-fetched. I think that it is important not to confuse these aspects in the debate.

To conclude, I am convinced that it is a natural process for European financial markets to embrace more and more elements of the Anglo-American system as they become more developed. From a philosophical perspective, the development of the financial system is closely related with the development of civic society. That is, the development of the financial system must be seen in the context of a society's identity. Put briefly, Anglosaxon societies – people with a Protestant background – have tended to be more risk-friendly than their Catholic central European counterparts. In most central European societies the church and government would typically fulfill tasks that are up to the individual citizens in Anglosaxon countries. Put differently, the development of financial markets is also a process of emancipation, which is basically to be welcomed, although I share most doubts about the effectiveness of financial markets. Financial markets seldom deliver what they are generally expected to do in the political discussion. After all, various interests play a big role.

Generally speaking, my assessment is: the higher the degree of financial deregulation, the better – even more so if financial market supervision is strengthened at the same time. Economic policymakers or regulators would thus be well advised not to impose too stringent provisions on modern financial

markets or not to put them into a political straitjacket. Instead, they should monitor developments very closely and take care not to be outsmarted by the markets. Thus, the buck in fact stops with state financial and capital market regulators. They must be adequately equipped to monitor financial markets effectively and, above all, draw the right conclusions. Moreover, they must have adequate jurisdiction and appropriate resources to intervene at the right moment (and they must be willing to do so).

Peter Mooslechner

In a longer-term perspective, the 1950s and the 1960s may well prove to have been a historic exception. But since we cannot – and had better not – turn back the hands of time, we should much rather try to single out the elements of financial market development that have proved useful and that can be integrated into today's systems. This appears indispensable because the framework conditions have since changed fundamentally in many respects. What strikes me is that, given the kind of asset economy that we have reached and given the persistent crisis rhetoric, astonishingly few and minor incidents have actually occurred.

As is evident from the example of pension provision, financial assets are not tangible goods, but simply a mechanism for rationing resources over time. By building up financial assets, we accumulate claims on future output. However, the decisive question is: How much output will the economy produce at a given point in the future to allow all claims to be satisfied, even if the benefits are distributed unevenly, and how will today's financial system – by financing the investments that must be made in order to satisfy future claims – affect output, say, in 10 to 20 years' time?

Abbreviations

AMS	Arbeitsmarktservice Österreich (Austrian Public Employment Office)	GDP	Gross Domestic Product
ARTIS	Austrian Real Time Interbank Settlement	HICP	Harmonized Index of Consumer Prices
BWA	Bundes-Wertpapieraufsicht (Federal Securities Supervisory Authority)	IHS	Institut für Höhere Studien (Institute for Advanced Studies)
BWG	Bankwesengesetz (amendments to the Banking Act)	IIP	International Investment Position
		IMF	International Monetary Fund
CAD	Capital Adequacy Directive	NACE	Nomenclature générale des Activités économiques dans les Communautés Européennes (Statistical Classification of Economic Activities)
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
 ∅ = Mean value
 _ = New series

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

Official Announcements
of the Oesterreichische Nationalbank

Official Announcements
Regarding the Foreign Exchange Law

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

DL 1/91	Promulgation of the new Official Announcements regarding the Foreign Exchange Law; general provisions	Sept. 24, 1991	4/1991
	1. Issuance of new Official Announcements		
	2. Definitions		
	3. Fees		
DL 2/91	Granting of general licenses	Sept. 24, 1991	4/1991
	1. General license		
	2. Waiver of obligation to declare; release		
	3. Nonbanks		
	4. Banks not engaged in foreign business		
	5. Foreign exchange dealers		
	6. Exchange bureaus		
	7. Special banks and financial institutions		
	8. Provisions applying to both banks and financial institutions		
DL 3/91	Reporting requirements	Sept. 24, 1991	4/1991
	1. General provisions		
	2. Exemptions from the reporting obligation		
	3. General reports		
	4. Reports by banks		
	5. Reports by nonbanks and financial institutions		
	6. Special reports		
DL 4/91	Assets of nonresidents with residence (domicile) in Iraq	Oct. 29, 1991	4/1991
DL 2/93	Modification of the Official Announcement DL 3/91	May 5, 1993	2/1993
DL 1/95	Repeal of the Official Announcement DL 1/93; SC Resolution 1022 (1995) Concerning the suspension of the sanctions of the United Nations against the Federal Republic of Yugoslavia	Dec. 21, 1995	4/1995
DL 1/96	Modification of Official Announcement DL 3/91	Sept. 3, 1996	3/1996
DL 1/99	Modification of Official Announcements DL 2/91 and DL 3/91 to the Foreign Exchange Act	Dec. 21, 1998	4/1998
DL 2/99	Abrogation of Official Announcement DL 3/93 Sanctions of the United Nations against Libya	April 30, 1999	1/1999
DL 3/99	Modification of Official Announcement DL 3/91 with respect to the Foreign Exchange Act	Dec. 16, 1999	3/1999
DL 1/01	Modification of Official Announcement DL 3/91 with respect to the Foreign Exchange Act	June 19, 2001	2/2001

	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
DL 3/02	Modification of Official Announcement DL 2/02	Jan. 20, 2003	4/2002

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

List of Reports, Summaries and Studies[1])

Oesterreichische Nationalbank and Selected Monetary Aggregates

Official Announcements Regarding the Foreign Exchange Law and Minimum Reserve Requirements – see preceding page	
Calendar of Monetary Highlights	2/1999
The Possibilities and Limitations of Monetary Policy – Results of the OeNB's 27th Economics Conference	3/1999
Calendar of Monetary and Economic Highlights	4/1999
Calendar of Monetary and Economic Highlights	1/2000
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
Calendar of Monetary and Economic Highlights	1/2001
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
Calendar of Monetary and Economic Highlights	3–4/2001
Calendar of Monetary and Economic Highlights	1/2002
Calendar of Monetary and Economic Highlights	2/2002
Calendar of Monetary and Economic Highlights	3/2002

Please see the German-language publication "Berichte und Studien" for a list of all German-language reports, studies and special publications of the OeNB.

Austrian Financial Market

Austria's Major Loans Register in 1998	2/1999
Money and Credit in the First Half of 1999	3/1999
Banking Holidays in Austria	4/1999
Money and Credit in the First Three Quarters of 1999	4/1999
Money and Credit in 1999	1/2000
The Austrian Supervisory Risk Assessment System	1/2000
Money and Credit in the First Quarter of 2000	2/2000
Risk Analysis of a Representative Portfolio of International Assets	2/2000
Calculating the Thresholds for the Notification of Mergers of Banks – The New Legal Situation	2/2000
Money and Credit in the First Half of 2000	3/2000
Banking Holidays in Austria	4/2000
Money and Credit in the First Three Quarters of 2000	4/2000
Money and Credit in the Year 2000	1/2001
Money and Credit in the First Quarter of 2001	2/2001
Money and Credit in the First Half of 2001	3–4/2001
Banking Holidays in Austria in the Year 2002	3–4/2001
Money and Credit in the Year 2001	1/2002
Money and Credit in the First Quarter of 2002	2/2002
EURIBOR Interest Rate Instruments as Indicators of Financial Market Expectations	2/2002
Money and Credit in the First Three Quarters of 2002	4/2002

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 Real Economy (cont.)

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
Economic Background	3/2002
Identification of Wage Rigidities in Microdata – a Critical Literature Review	3/2002
Financial Accounts in Accordance with ESA 95 – Financial Assets and Liabilities of the Sectors of the Austrian Economy; Results for 2001	3/2002
Economic Outlook for Austria from 2002 to 2004 (Fall 2002)	4/2002
Austria's Financial Accounts: Financial Investment and Financing Transactions of the Sectors of the Austrian Economy – Results for 2001	4/2002

External Sector

Austria's International Investment Position in 1997	1/1999
Special Survey on the Regional Allocation of Nonresident Securities Held by Residents as of December 31, 1997	1/1999
Balance of Payments for the Year 1998	2/1999
New Concept of the Austrian Balance of Portfolio Investment	2/1999
Austrian Outward and Inward Direct Investment at the End of 1997	2/1999
Balance of Payments in the First Quarter of 1999	3/1999
Austria's International Investment Position in 1998	3/1999
Balance of Payments in the First Half of 1999	4/1999
Austrian Outward and Inward Direct Investment in 1997 – Results of the 1997 Survey and Development of Selected Indicators	4/1999
1997 Coordinated Portfolio Investment Survey	4/1999
Balance of Payments in the First Three Quarters of 1999	1/2000
Balance of Payments in 1999	2/2000
Austrian Outward and Inward Direct Investment at the End of 1998	2/2000
Balance of Payments in the First Quarter of 2000	3/2000
Austria's International Investment Position in 1999 – The External Sector of the Financial Account	3/2000
Balance of Payments in the First Half of 2000	4/2000
Austrian Outward and Inward Direct Investment – Results of the 1998 Survey and Development of Selected Indicators	4/2000
New Statistical Framework for the Portfolio Investment Position	4/2000
Balance of Payments in the First Three Quarters of 2000	1/2001
Balance of Payments in the Year 2000	2/2001
Austrian Outward and Inward Direct Investment at the End of 1999	2/2001
Balance of Payments in the First Quarter of 2001	3–4/2001
Austria's International Investment Position in 2000	3–4/2001
Austrian Outward and Inward Direct Investment – Results of the 1999 Survey and Development of Selected Indicators	3–4/2001

List of Studies
on Focus on Austria Main Topics

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

Focus on Austria 1/2003:

Finance for Growth
Finance for Growth, Finance and Growth, Finance or Growth . . .?
Three Perspectives on the Interaction of Financial Markets and the
Real Economy
Stock Markets, Shareholder Value and Investment
Financial Development and Macroeconomic Volatility:
Evidence from OECD Countries
A Financial Decelerator in Europe? Evidence from Austria
Banking Structure and Investment in Austria:
Some Empirical Evidence
Corporate Governance, Investment, and the Implications
for Growth
Panel Discussion: What Kind of Financial System Works Best
for Europe?

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. 12/2002 of "Statistisches Monatsheft."

Addresses
of the Oesterreichische Nationalbank

	Postal address	Telephone	Telex
Head Office			
Otto-Wagner-Platz 3	P. O. Box 61	+43-1/404 20, ext.	(1) 114669 natbk
A 1090 Vienna	A 1011 Vienna	Fax: +43-1/404 20 2398	(1) 114778 natbk
Internet: http://www.oenb.at	Austria		
Branch Offices			
Bregenz	P. O. Box 340	+43/5574/49 61, ext.	
Anton-Schneider-Straße 12	A 6901 Bregenz	Fax: +43/5574/49 61 99	
	Austria		
Eisenstadt	P. O. Box 60	+43/2682/627 18, ext.	
Esterhazyplatz 2	A 7001 Eisenstadt	Fax: +43/2682/627 18 99	
	Austria		
Graz	P. O. Box 8	+43/316/81 81 81, ext.	
Brockmanngasse 84	A 8018 Graz	Fax: +43/316/81 81 81 99	
	Austria		
Innsbruck		+43/512/594 73, ext.	
Adamgasse 2	A 6021 Innsbruck	Fax: +43/512/594 73 99	
	Austria		
Klagenfurt	P. O. Box 526	+43/463/576 88, ext.	
10.-Oktober-Straße 13	A 9010 Klagenfurt	Fax: +43/463/576 88 99	
	Austria		
Linz	P. O. Box 346	+43/732/65 26 11, ext.	
Coulinstraße 28	A 4021 Linz	Fax: +43/732/65 26 11 99	
	Austria		
Salzburg	P. O. Box 18	+43/662/87 12 01, ext.	
Franz-Josef-Straße 18	A 5027 Salzburg	Fax: +43/662/87 12 01 99	
	Austria		
St. Pölten	P. O. Box 5	+43/2742/313 483, ext.	
Julius-Raab-Promenade 1	A 3100 St. Pölten	Fax: +43/2742/313 483 99	
	Austria		

Representative Offices

Oesterreichische Nationalbank	+44/20/7623 6446	
London Representative Office	Fax: +44/20/7623 6447	
5th floor, 48 Gracechurch Street		
London EC3V 0EJ, United Kingdom		
Oesterreichische Nationalbank	+1/212/888 2334	(212) 422509 natb ny
New York Representative Office	+1/212/888 2335	
745 Fifth Avenue, Suite 2005	Fax: +1/212/888 2515	
New York, N. Y. 10151, U.S.A.		
Permanent Mission of Austria to the EU	+32/2/285 48 42, 43	
Avenue de Cortenbergh 30	Fax: +32/2/285 48 48	
B 1040 Bruxelles, Belgium		
Permanent Mission to the OECD	+33/1/53 92 23 39	
3, rue Albéric-Magnard	+33/1/53 92 23 44	
F 75116 Paris, France	Fax: +33/1/45 24 42 49	