1 Introduction

Robert Anderton and Filippo di Mauro[1]

Being a relatively-closed economy in comparison with the individual constituent countries has not exempted the euro area economy from a broad range of economic impacts originating from outside its borders. If anything, the impact of external factors has actually been stronger than previously thought. Against this backdrop, the objective of this book is to study the complex interactions between the euro area economy and the growing set of factors representing its external environment.

A number of reasons are identified in this book as having possibly heightened the importance of a better understanding of the external linkages of the euro area. First, while the process of growing world-wide links among economies related to the process of globalisation of trade in goods and financial services has been universal, it may have impacted on the euro area somewhat differently than elsewhere. For example, though being in aggregate a relatively closed economy, the euro area is in fact composed of some rather open economies which are subject to indirect impacts of external shocks via the strong intra-euro area links between the euro area countries. Second, shifts in trade within the euro area have been taking place, led by an acceleration of the ongoing processes of delocalisation of production towards low cost countries, particularly in Eastern Europe. Against this backdrop, the external environment appears to have interacted with the euro area in a different manner than before. Third, there is evidence that globalisation may have increased the number of channels of international linkages in addition to the most-traditional channels, such as trade and capital flows. In this context, the book identifies some additional factors – such as confidence – which may have increased in importance.

The identification of the main channels of transmission and the evidence available to practitioners is the overall objective of chapter 2 ('The external dimension of the euro area: stylised facts and initial findings' –

1 European Central Bank: respectively Adviser and Head of Division, External Developments Division. All views expressed in this chapter are those of the authors and do not necessarily reflect those held by the European Central Bank.

Robert Anderton and Filippo di Mauro). The chapter begins by 'setting the scene' for chapters 3 and 4 which contain a more detailed analysis of individual topics. The structure of the chapter mimics the structure of the book. The first part handles the trade channel, the second the capital flows channel, the third covers the issue of other macroeconomic linkages – such as confidence – as well as measuring the degree of international synchronisation to gauge the overall outcome of the increasing integration of the global economy. Based also on work of numerous ECB colleagues, the chapter provides stylised facts and first findings regarding the external dimension of the euro area alongside comparisons with major competitors. A number of overarching questions are examined and tentative replies are provided. Among them is the issue of how good are standard openness measures to ascertain the impact of trade developments on the euro area economy: and, as mentioned before, how globalisation may have changed the main channels and mechanisms by which the euro area is influenced by external developments and how they may be changing through time. The role of common shocks, such as an increase in oil prices, is examined along with an empirical analysis of the international synchronisation of economic cycles. Overall, the chapter finds that the magnitude of the trade links may have increased over time, while also becoming more complex with the impacts depending on the nature of shocks and how they relate to the product and geographical specialisation of euro area trade. Meanwhile, the global surge in cross-border capital flows has increased the potential magnitude of the impact of capital flows as a channel for the transmission of external shocks to the euro area, particularly the FDI channel. As regards the overall co-movement of output across countries, some empirical measures of synchronisation of international activity reveal that the degree of synchronisation has shown a trend decline over the past three decades in the major economies, although there has also been an increase in synchronisation since the mid-1990s. Despite the fact that the recent increase in synchronisation might be due to a possible increase in the number and magnitude of external linkages due to globalisation, common shocks, such as the oil price shock from 1999–2006, as well as the global ICT shock associated with the downturn in 2000, may also provide part of the explanation.

The trade channel in goods and services is the traditional channel through which economies may affect each other, and experience shows that trade still represents one of the most important building blocks of the euro area external dimension. Following the analysis in chapter 2, key issues relating to the trade channel are addressed in chapters 3 and 4: a) the role of product variety for explaining export performance; and b) the exchange rate pass-through to import prices in the euro area.

Chapter 3 ('Product variety and macro trade models: implications for the new EU Member States' by Joseph E. Gagnon) concerns the trade implications of the new EU Member States. The author argues that standard macroeconomic models may embody a misspecification of the trade sector, as they omit an important effect of a country's potential output on its exports, namely the product-variety impact on exports. According to these macro-models, countries that are expected to grow faster than their trading partners for an extended period of time – as is the case with the new EU Member States (NEUMS), should experience a secular decline in their terms of trade. However, long-term trends in trade can be better explained if alternative trade specifications which incorporate the role of product variety are used. In this alternative specification, which proves to be relevant for the NEUMS, fast-growing countries are able to achieve strong export growth without declining terms of trade once the 'varieties model' of trade is incorporated into standard models. Accordingly, taking variety models into account may help us to better understand the evolution of euro area trade, as well as terms of trade developments, *vis-à-vis* the new EU Member States.

The trade channel is also the topic of chapter 4 'Exchange-rate pass-through to import prices in the euro area' by José Manuel Campa, Linda Goldberg and José M. Gonzalez-Minguez. The impact of exchange rate movements on domestic prices and economic activity has long been a matter of interest in international macroeconomics. More recently, this issue has gained special interest due to the rather strong fluctuations of the exchange rate between the euro and the dollar. The empirical work focuses on the pass-through of exchange rate changes into the prices of extra-euro area imports of individual euro area countries, analysing the differences across industries and countries. A number of factors can affect the pass-through, for example: different degrees of openness of the member countries' economies to extra-euro area imports; heterogeneity in the product composition of imports for given industry-specific rates of pass-through; or, different product and country-specific rates of pass-through to import prices for any given composition. The analysis shows that exchange rate changes continue to lead to significant changes in import prices across euro area countries: on average, the authors find that the exchange rate pass-through to import prices across the euro area countries is around 80 per cent in the long term. Overall, the transmission in the short term proves to be high, although incomplete, and differs across industries and countries; in the long term, the exchange rate pass-through is higher and closer to one. The authors do not find strong statistical evidence that the introduction of the euro has caused a structural change in this transmission process, although some empirical results show that industries producing differentiated goods seem to have been more likely to experience reduced rates of exchange rate pass-through to import prices since the start of EMU.

Cross-border capital and financial flows represent an increasingly-important link of the euro area with its external environment. Two specific aspects are dealt with in chapters 5 and 6. First, the determinants of the euro area's foreign direct and portfolio investment, particularly equity holdings, are analysed in detail. Second, the ways in which FDI may transmit shocks to the euro area are evaluated.

Cross-border capital flows are the subject of chapter 5 ('The international equity holdings of euro area investors' Philip R. Lane and Gian Maria Milesi-Ferretti) which analyses the pattern of the investment of equity holdings for the euro area, providing an analysis of bilateral, source and host factors driving portfolio equity investment. The authors present statistics on stock market size and foreign ownership, and relate the actual geographical pattern of portfolio investment with that predicted by the relative importance of countries' stock markets in the world portfolio. The analysis shows that the euro area is a major portfolio equity investor, second only to the United States, and is even larger if intra euro holdings are taken into account. The results from this study show that the pattern of investment of equity holdings for the euro area is strongly related to the size of host country characteristics such as stock market capitalization, bilateral trade ties and its status as a financial centre. Finally, in a sample of OECD investor countries, the authors find evidence that intra-euro area equity investment is larger than that predicted on the basis of 'fundamentals' such as trade ties, distance, and co-movements in key macroeconomic variables.

Chapter 6 ('Global linkages through foreign direct investment' by Jos Jansen and Ad C. J. Stockman) investigates the relationship between FDI and economic linkages across countries. The increasing globalisation and integration of the world economy in the fifteen years up to the early 2000s has motivated an explosive growth of FDI, possibly associated with a higher degree of synchronicity of economic trends across the world. In particular, the chapter reviews the downturn in the United States in the early 2000s which seems to have exerted a bigger impact on other countries than expected from 'traditional' linkages. The authors begin with a description of some stylised facts on FDI patterns and its significance for the host countries. Looking at both the supply- and demand-side effects, they then turn to the possible international spillover effects of FDI, including labour market channels, given the importance of multinational companies in employing labour across the globe. The empirical results support the evidence that FDI, apart from the foreign trade channel, now constitutes a separate channel through which economies may affect each other in an economically-significant way. In addition, foreign disturbances transmitted through the FDI channel may have a more durable effect on the domestic economy than those transmitted through the trade channel. This research has two policy implications relevant in the analysis of the external dimension of the euro area. The first is that the trend towards greater economic interdependence through FDI implies an underlying tendency for business cycles to display a more-synchronised behaviour than in the past, which amounts to a higher effective openness of the euro area with respect to its external environment. The second is that FDI appears to have become an important channel for the international transmission of disturbances, which therefore needs to be embedded into global macroeconomic models. This latter issue is implicitly dealt with in chapter 8, where a global Vector Auto Regression Model (VAR) is presented as a way to treat the transmission mechanisms beyond the trade channel.

The impact of the external dimension as measured by **global models** is the focus of chapters 7 and 8. Against the background of a quite extensive literature, two rather different approaches are presented, which may illustrate the main issues involved in an overall quantitative assessment of the impact of the external dimension on the euro area. The main conclusion of the section is that one cannot identify one single, overwhelmingly-superior approach. In particular, the choice of the most-adequate modelling technique depends on the issue at hand, most notably whether tractability is more critical than structural detail. For example, structural models may have advantages in terms of capturing impacts of quite specific policy responses, while VAR-based models may be somewhat better at capturing the impacts of external shocks due to their more-transparent modelling of international linkages through various channels.

On the one hand, there is the work carried out by R. Barrell and P. Davis which partly uses the National Institute Global Econometric Model (NIGEM) to calibrate the macroeconomic effects of changes in share prices. On the other hand, A. Calza and S. Dees provide an assessment of the strength of international linkages building on the model used by Dees, di Mauro, Pesaran and Smith (2005) based on the Global Vector Auto-Regressive (GVAR) approach proposed by Pesaran, Schuermann and Weiner (2004). The GVAR approach consists of a modelling framework which covers the macroeconomic responses to various types of global and national shocks through a number of transmission channels, which include both trade and several financial linkages.

Chapter 7 ('Shocks and shock absorbers: The international propagation of equity market shocks and the design of appropriate policy responses', R. Barrell and P. Davis) provides an assessment of the macroeconomic implications of equity price falls for the US and the major euro area countries using Vector Error Correction Mechanism (VECM) models and those produced using the National Institute Global Econometric Model (NIGEM). The authors assess the implications of equity price falls comparable to those seen in 2000–2002 against the background of the high degree of correlation between equity price changes in recent years. An indication of the effect of different policy responses is also provided. Based on estimated relationships, falls in equity prices of the scale observed over 2000–2002 can have significant recessionary effects on the world economy. According to the VECM results, composition of wealth, openness and trade patterns are among the key factors which influence the scope of output responses internationally. For the US in particular, the dependence of firms on market-based finance helps explain why equity prices have a larger impact on output than they do in Europe (the contribution of equity prices to a variance decomposition of output is around three times greater in the US, at 50 per cent, than in the larger euro area economies). Finally, the authors also show that active policy responses to equity price falls is a wise strategy and that structural models are a useful part of the policy analysis toolkit. Overall, the authors argue that VECM studies can only evaluate the 'average' policy response over the sample period for which they are estimated, while structural models are necessary to explain how policy may mitigate the effect of shocks.

In chapter 8, 'The euro area in the global economy: its sensitivity to the international environment and its influence on global economic developments' A. Calza and S. Dees makes use of the Global Vector Auto-Regressive (GVAR) model to assess the importance of changes in global economic conditions for developments in the euro area and, more generally, evaluate the dependence of the euro area economy on external factors. As a complement to this analysis, they also analyse the impact of shocks originating from the euro area on its main trading partners, which should help in evaluating the relative importance of the euro area in the global economy. By providing a framework capable of accounting for both trade and financial transmission channels, the GVAR model is particularly suitable to analyse the transmission of real and financial shocks across countries and regions, especially taking into account the strengthening in cross-border financial integration. The simulations confirm that trade remains the predominant source of linkages between the euro area and the rest of the world while also highlighting the importance of second- and third-market effects of shocks (particularly those relating to financial variables). The authors underline that financial shocks tend to be transmitted much faster than shocks to output, as they are often amplified as they travel from the originating country to the rest of the world. Finally, the simulations also show that there is a greater degree of synchronicity between financial variables across countries in comparison to inflation and output.

Overall, the book underlines the difficulties in understanding the transmission and the final effects of external shocks on the euro area, and highlights the complexity of the various direct and indirect mechanisms. The conclusion is that the 'external dimension' of the euro area has a complex impact on economic developments in the euro area. Policy makers should be aware that real and financial market linkages between the euro area and the rest of the world may be changing over time both in number and magnitude, with globalisation being one possible driving force behind such changes. Moreover, increasingly important factors that are common to other economies, such as globalisation, are compounded by the fact that the euro area is a new and still somewhat unfamiliar entity, so many structural and possibly, some global changes, are at play contemporaneously.

2 The external dimension of the euro area: stylised facts and initial findings

Robert Anderton and Filippo di Mauro[1]

Although relatively closed in comparison with the individual constituent countries, the euro area economy is still rather open – particularly when compared with the two other largest world economies, the US and Japan. The experience of the first few years of EMU has shown that the euro area continues to be subject to a broad range of economic impacts originating from outside its borders, and that the extent of some external impacts are possibly higher than what might have been expected given the relatively-more internationally-insulated aggregate economy of the euro area. For example, the euro area was affected rather strongly by the ICT-related global downturn in early 2000, despite its relatively-low dependence on the ICT sector.

A full explanation of the above developments is a daunting task, particularly because aspects related to the effects of the creation of the monetary union are occurring at the same time as other impacts which are connected with global trends, such as rapid growth in world trade in goods and services, increased mobility of international capital, rising financial integration across the world, and rapid growth in the internationalisation and relocation of production. These difficulties notwithstanding, in several years of analysis of the external environment of the euro area we have learned quite a lot in terms of identification of the transmission channels of external shocks and their impacts. It is the aim of this chapter to report on such facts and findings, fully aware, however, that the development of a comprehensive framework to gauge the external dimension of the euro area is still not entirely complete.

Based also on the work of numerous colleagues[2] as well as the authors, a number of overarching questions are examined in this chapter, including:

[1] European Central Bank: Respectively Adviser and Head of Division, External Developments Division. All views expressed in this chapter are the authors' and do not necessarily reflect those held by the European Central Bank.

[2] First and foremost, we would like to acknowledge the extremely valuable assistance of Natàlia Mas Guix who put the various elements of this chapter together, particularly the Charts and Tables. The chapter draws heavily on substantial works and advice on the subjects by economist colleagues in the European Central Bank's External

how good are standard openness measures to ascertain the impact of trade developments on the euro area economy? what are the most relevant economic linkages between the euro area and the rest of the world? what are the channels and mechanisms by which the euro area is influenced by external developments? What is the role of common shocks, such as an increase in oil prices, what have we learnt about a possible increase in the international synchronisation of economic cycles and what are the implications? To provide some preliminary answers we look at three sets of channels: trade, financial flows and other linkages.

2.1 The external trade of the euro area

International trade in goods and services is the traditional channel through which shocks are transmitted from one economy to another and seem to be one of the most important channels of the euro area's external linkages. This section aims to analyse how, and to what extent, the trade channel matters for the euro area economy. The objectives are twofold: (1) first, to investigate how the international environment affects the euro area through trade, also in comparison with main competitors; (2) second, to shed light on the mechanisms and magnitudes of the international transmission of shocks via the trade channel.

This assessment is highly relevant in the context of the economic analysis for the monetary policy assessment for at least two reasons. First, as the euro area includes some countries with relatively high degrees of openness, it may be the case that its effective degree of openness towards the rest of the world is higher than standard trade indicators would indicate. Second, the relative competitive position among individual euro area countries since EMU has changed somewhat, partly reflecting the mechanisms through which the external environment affects them and the euro area as a whole. In this context, new structural factors – emerging in parallel to EMU – such as the entrance of new global trade players, most notably China and the new EU Member States, may have also hampered the ability of standard trade equations to be a reliable guide to assess the current impact of the trade channel.

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Table 2.1 *Key real economy characteristics of the euro area in 2004*[1]

	Euro area	United States	Japan
Population (millions)	311.7	293.9	127.6
GDP (calculated at purchasing power parity, EUR trillions)	7.7	10.2	3.3
Share of world GDP (calculated at purchasing power parity, %)	15.3	20.9	6.9
Exports (goods & services, % GDP)	19.3	9.8	13.9
Imports (goods & services, % GDP)	17.6	15.1	11.8
Share of world exports[2]	28.5	15.8	4.6

Source: ECB, Eurostat and World Economic Outlook (WEO, IMF).
[1] All tables and charts referring to euro area trade refer to extra-euro area trade unless otherwise indicated.
[2] The world export share of the euro area includes intra-area trade, which represents roughly 50% of the euro area's total exports.

This section is divided into three parts. The first part provides some stylised facts regarding the measurement of the trade openness of the euro area and its member states along with some comparisons *vis-à-vis* the United States and Japan. The second looks at the factors driving euro area trade also against the background of what standard elasticities would predict. The final part provides a detailed geographical and sectoral analysis of the euro area's external trade which is useful for considering its prospects going forward.

2.1.1 The openness of the euro area

International comparisons

The euro area is one of the world's major economies, comparable in size to the United States and considerably larger than Japan. Measured in terms of population, the euro area, with more than 300 million people, is the largest developed economy in the world (Table 2.1). In 2004, the euro area contributed around 15 per cent of world GDP, somewhat less than the United States (21%), but more than double that of Japan (7%). In terms of world trade, the euro area contributed the most, accounting for 28 per cent of the value of world exports, compared with approximately 16 per cent and 5 per cent for the United States and Japan, respectively.

With regard to both exports and imports, the euro area is significantly more open than either the United States or Japan. In fact, its openness in terms of the combined value of imports and exports of goods and services