



OECD Economics Department Working Papers No. 552

Globalisation
and the Macroeconomic
Policy Environment

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<https://dx.doi.org/10.1787/185006265382>

Unclassified

ECO/WKP(2007)12



Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

04-May-2007

English text only

ECONOMICS DEPARTMENT

ECO/WKP(2007)12
Unclassified

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by **Karine Hervé, Isabell Koske, Nigel Pain, Franck Sédillot**

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JT03226466

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ABSTRACT/RÉSUMÉ

Globalisation and the Macroeconomic Policy Environment

This paper investigates the macroeconomic policy challenges associated with a prospective continuation of international trade and financial integration over the next two decades, making use of a global macroeconomic model newly developed by the OECD. The analysis has several important policy implications. First, with the shares of non-OECD economies in world output, trade, and capital markets rising substantially, global economic developments would become much more dependent on developments in these economies than they used to be. Second, the sustainability of existing global current account imbalances will depend in part on the future build-up and composition of international assets and liabilities. While the imbalances could be sustainable for some time if economic integration continues at its current pace, a slowdown of the globalisation process would raise the likelihood of a disruptive adjustment in financial markets. Third, the increase in trade and financial linkages implies that macroeconomic shocks in a given country or region have a larger impact on other economies in the future than they do today. Policymakers in the OECD may have to act more promptly and more vigorously to economic “shocks” in the non-OECD economies in order to limit the impact on OECD economies.

JEL classification: E17; E60; F01; F47

Keywords: globalisation, growth; current accounts; macroeconomic policy

Mondialisation et environnement de politique macroéconomique

Ce papier étudie les défis de politiques économiques posés par la poursuite éventuelle au cours des deux prochaines décennies de l'intégration commerciale et financière internationales. Cette étude est fondée sur l'utilisation d'un modèle macroéconomique mondial récemment développé par l'OCDE. L'analyse conduit à plusieurs implications politiques importantes. Tout d'abord, avec une part croissante des économies non membres de l'OCDE dans la production mondiale, le commerce et les marchés financiers, les changements économiques mondiaux deviendront beaucoup plus dépendants de ceux de ces économies. Ensuite, la soutenabilité des déséquilibres mondiaux des comptes courants existants dépendra en partie de la construction et de la composition futures des avoirs et engagements internationaux. Alors que les déséquilibres devraient être soutenables un certain temps si l'intégration économique continue à ce rythme, un ralentissement du processus de mondialisation augmenterait la possibilité d'un ajustement brutal des marchés financiers. Enfin, l'accroissement des liens commerciaux et internationaux implique que les chocs macroéconomiques affectant un pays ou une région donnée auront dans le futur un impact plus fort sur les autres économies que maintenant. Les décideurs politiques des pays de l'OCDE devraient donc agir plus rapidement et plus fortement aux chocs économiques affectant les économies non membres de l'OCDE afin d'en limiter l'impact sur les économies membres.

Classification JEL ; E17; E60; F01; F47

Mots clés : mondialisation ; croissance ; compte courants ; politique macroéconomique

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GLOBALISATION AND THE MACROECONOMIC POLICY ENVIRONMENT

by

Karine Hervé, Isabell Koske, Nigel Pain, Franck Sédillot^{1,2}

1. Introduction and summary

1. Over the past decade international economic integration has proceeded rapidly, with global trade and cross-border capital flows rising substantially relative to GDP. These developments have been accompanied by robust economic growth, especially in many non-OECD economies, and rising output per capita. Whilst enhanced integration has provided many benefits, it has also coincided with marked structural changes in product and labour markets in the OECD economies, with the presumed effects on income distributions and employment prompting political pressures to slow down the globalisation process.

2. This paper investigates the macroeconomic policy challenges that may be associated with a prospective continuation of international trade and financial integration over coming decades, making use of a global macroeconomic model and associated database newly developed by the OECD. The initial step is to construct two possible scenarios for the world economy out to 2025. The first of these reflects the continuation of current globalisation trends, whereas the second moderates these trends considerably. Such a moderation may result from the social and political concerns about income distributions, labour market outcomes and the environmental impact associated with ongoing globalisation. Both scenarios provide insights into the possible future paths of global economic growth, international trade and cross-border asset holdings, as well as the macroeconomic policy settings that may help to secure such outcomes. The first scenario is then used as a baseline for a number of different simulations of the impact of economic shocks arising from the non-OECD economies on the OECD economies. These are conducted at different points in time to examine whether the rising level of trade and financial market cross-border linkages affects the impact of such shocks on the OECD economies and thereby OECD country policy responses.

3. The most important feature of the analysis is that global economic developments would become much more dependent on developments in the non-OECD economies than they used to be. The shares of the non-OECD economies in world output, trade, and capital markets are set to increase substantially. If the process of globalisation continues at its current pace, non-OECD economies are projected to account for approximately 60% of world real output (evaluated in PPP terms), one-half of nominal world trade (at current market rates), and a third of nominal cross-border asset and liability holdings by 2025.

1. The authors are members of the Macroeconomic Analysis and Systems Management Division of the Economics Department of the OECD. They are grateful to Pete Richardson, Jean-Philippe Cotis, Mike Feiner, Jorgen Elmeskov and other colleagues in the Economics Department for helpful comments and suggestions, to Pierre-Olivier Beffy and Ane-Kathrine Christensen for their work in preparing the model used and the associated database, and to Diane Scott for assistance in preparing the document.

2. This paper forms part of the OECD Economics Department contribution to the OECD-wide Globalisation and Structural Adjustment project. Part of the work in the paper has been made possible by financial support from Japanese ESRI funding.

4. The results of the analysis have important implications for several policy issues, including the sustainability of current external imbalances, the transmission of macroeconomic shocks across countries, and the convergence of GDP per capita between OECD and non-OECD economies. Specifically, the main implications of the analysis are as follows:

- The likelihood of exchange rate crises and financial market disruption will depend in part on the future build-up and composition of international assets and liabilities. The continued globalisation scenario suggests that, under a number of assumptions, a large US current account deficit could be consistent with the United States retaining broadly the same share of world foreign liability holdings in 2025 as in 2005 despite continued large net capital inflows. Rapid economic growth and financial integration will increase the global pool of funds that can be invested, including in US liabilities. Against this, the share of portfolios that investors would wish to hold in US liabilities is likely to diminish as the US economy is set to decline as a share of the world economy. Given that US financial markets currently enjoy an advantage in terms of depth and efficiency, the first of these forces may have a stronger influence in the near to medium term.
- A slowdown of the globalisation process would raise the likelihood of a disruptive depreciation of the US dollar. This is illustrated in the moderated globalisation scenario, showing that US external liabilities would rise further as a share of global financial liabilities if the pace of global economic integration decelerated. Given the modest slowing in the prospective extent of globalisation, the scenario has only a small increase in US external liabilities. A much stronger slow-down could be imagined, leading to a correspondingly stronger impact on the external position of the United States.
- In many non-OECD economies, notably China, adverse valuation effects would act to offset the impact of any continued accumulation of current account surpluses on net international asset holdings. This might also help to bring about an eventual rebalancing of portfolios and a decline in the share of assets held in the US economy.
- The level of international trade and cross-border asset holdings would rise significantly relative to GDP during the period 2005 to 2025. The increase in trade and financial linkages implies that macroeconomic shocks in a given country or region have a larger impact on other economies in the future than they do today. In particular, countries are set to have larger external assets and liabilities than at present, raising their exposure to financial market disturbances associated with abrupt changes in asset prices and exchange rates. Simulation analyses suggest that the impact of economic shocks in non-OECD economies on the GDP of OECD economies might be twice as large in 2015 as in 2005.
- An important implication of this is that monetary policy would need to take greater account of developments in the non-OECD economies in the future. Policymakers in the OECD may have to act more promptly and more vigorously to economic “shocks” in the non-OECD economies in order to limit the impact on OECD economies. At the same time, policymakers may need to respond less to domestic country-specific “shocks” in the future, since a greater share of the effects of such shocks will be absorbed by other countries via trade and financial linkages.
- World output growth is projected to average 4-5% per annum over the period 2005 to 2025 if globalisation continues at its current pace. GDP growth in the non-OECD economies will remain well above that in the OECD economies, reflecting higher productivity growth and more favourable demographic developments. This helps to raise per capita output in the non-OECD economies relative to those in the OECD. Per capita output in the non-OECD economies is

projected to rise by close to 5% per annum over the next two decades if globalisation continues at its current pace, compared with growth of 2% per annum in the OECD. Amongst the non-OECD, China and non-OECD Europe would enjoy the largest increases in per capita output.

5. The remainder of this paper is organised as follows. Section 2 contains an overview of selected developments in the world economy over the past decade or so, including the marked growth of financial integration and trade openness, trends in GDP growth, and the evidence about the role of openness and financial integration in influencing income convergence across countries. This sets the scene for Section 3 in which two alternative long-term scenarios for the world economy to 2025 are developed. The scenario with the highest extent of globalisation is then used for the simulation exercises discussed in Section 4. The main paper is complemented by an annex containing a short overview of the preliminary version of the new global macroeconomic model.

2. Recent developments in economic integration

6. International economic integration has proceeded rapidly over recent decades, especially from the mid-1990s onwards. This section provides an overview of these recent globalisation trends with a focus on financial flows, trade flows and GDP growth.³

2.1 Trade and financial integration

7. Global trade has expanded markedly over the past 25 years; the ratio of world exports to world GDP has more than doubled between 1980 and 2005 (Figure 1). This rise in world trade was to a large extent driven by developments in non-OECD economies whose share in world trade rose from about one-fourth in the early 1980s to about one-third by 2005. The expansion of international trade flows was particularly strong after 1995.⁴

8. Financial integration has also proceeded rapidly. For the OECD, the ratio of the sum of the stocks of foreign assets and liabilities to GDP has increased fivefold since the early 1980s (Figure 2).⁵ The increase in cross-border financial flows was particularly strong during the past decade, with the share of assets and liabilities in GDP rising by more than 130 percentage points between 1995 and 2005. In the non-OECD economies the process has evolved much more gradually, at least during recent years.⁶

9. The rise in cross-border trade and capital flows has been driven by a number of different factors, including the ongoing liberalisation of trade policies and capital controls in many countries and the continued reductions in transport, communication and information costs. These developments have helped the production of many goods and services to become more fragmented into components that are dispersed over different countries via international outsourcing and off-shoring, raising international trade.⁷ Improvements in ICT have also fostered cross-border financial flows by facilitating the development of

3. Developments up to the mid-1990s were discussed in detail in Richardson (1997).

4. Between 1995 and 2005 the ratio of world exports to world GDP rose by about 1 percentage point per year, compared with growth of less than ½ percentage point per year from 1980 to 1994.

5. See Kose *et al.*, (2006) for a comprehensive discussion of various measures of international financial integration.

6. Lane and Milesi-Ferretti (2003) show that prior to 1995 the pace of financial integration of non-OECD countries was similar to that of the OECD.

7. The fragmentation of the production process has led to rising levels of trade in specific tasks that are needed to accomplish individual steps in the supply chain (Baldwin, 2006, and Grossman and Rossi-Hansberg, 2006).

new financial instruments as a result of declining transaction costs. Worldwide financial integration has also been encouraged by the tendency towards improved domestic economic policies since the early 1990s, especially in Asian and a number of Latin American economies. Trade integration and financial integration also tend to reinforce each other in various ways.⁸ For example, larger trade flows will increase the demand for financial instruments for risk hedging. Similarly, “greenfield” foreign direct investment is normally associated with increased imports of capital goods during the construction phase and increased exports after the completion of the investment project.

10. The OECD economies continue to hold over four-fifths of cross-border assets and liabilities, suggesting that considerable scope remains for further growth in cross-border investments by the non-OECD economies (Figures 3 and 4). China and the rest of non-OECD Asia are both estimated to have positive net international assets, whereas the combined net assets of Africa, the Middle East and Latin America are approximately in balance, and non-OECD Europe has net international liabilities, which is what might normally be expected for emerging economies.

11. The composition of investments has evolved over time, changing the importance of revaluation effects from movements in different asset prices. For the OECD, foreign portfolio investment (FPI) has become the largest asset category held cross-border (Figures 5 and 6) comprising one-third of the total stock of foreign assets and over two-fifths of the total stock of foreign liabilities in 2004. A substantial part of FPI is invested in equities,⁹ making the OECD stock positions more affected by changes in international equity prices. Although high expected returns have made non-OECD economies a more attractive location for FPI in recent years, most of the investment undertaken by OECD economies still remains within the OECD (Figure 7). As the perceived risks of investing in the non-OECD economies begin to wane, there could well be higher levels of capital flows to those countries to take advantage of the prospective higher returns there.

12. Inward FDI flows to non-OECD countries have also risen significantly since the mid-1990s although, as with FPI, intra-OECD flows still dominate (Figure 8). The surge in inflows into the non-OECD economies was substantial, with a doubling of the share of FDI liabilities in GDP between 1995 and 2004 (Figure 9). As discussed below, this may well have increased the level of knowledge transfers to the non-OECD economies, helping to raise productivity. The asset side of the balance sheet of the non-OECD economies is dominated by “other foreign investment” (Figure 10). The rapid increase of this category in recent years has been driven by the accumulation of foreign exchange reserves.

13. The future evolution of cross-border asset holdings is contingent on the evolution of two main factors: the correlation of international asset returns and home bias. International return correlations affect the extent of cross-border asset holdings because a rise in the co-movement of national asset markets is tantamount to a decline in the potential gains from international portfolio diversification. Although the literature on international return correlations, and in particular stock market correlations, does not give any clear guidance as to the future evolution of cross-border asset holdings, the literature on home bias suggests that cross border asset holdings might expand further in the future if information costs continue to fall (see Box 1).

8. Lane and Milesi-Ferretti (2003) demonstrate that trade flows are significantly correlated with financial flows and that the size of the induced financial flows is generally a positive multiple of size of the original trade flows.

9. In 2004, equity investment accounted for 48% and 41%, respectively, of the total stocks of foreign portfolio assets and liabilities of the OECD.

Box 1. International stock market correlations and home bias

This Box contains a short discussion of relevant empirical studies of the evolution of international stock market correlations and home bias.

International stock market correlations

Historical data suggest that the returns from international securities are becoming more correlated over time (Shawky *et al.*, 1997; Yang *et al.*, 2006). One hypothesis is that this reflects the rise in global integration, with countries becoming more exposed to common regional or global shocks (Diermeier and Solnik, 2001). Portfolio diversification across industries may therefore have become more important relative to diversification across countries (Cavaglia *et al.*, 2000; Campa and Fernandes, 2006). An alternative hypothesis is that the observed rise in cross-country correlations was driven by the information technology bubble of the late 1990s, with the rise in correlations confined to technology, media and telecommunications sectors (Brooks and Del Negro, 2004; Ciner, 2006). If so, the increase in return correlations would be a temporary phenomenon rather than a general feature of global integration.

International stock market correlations continue to remain smaller than those in the domestic market, implying that international diversification is likely to continue to be worthwhile (Rezayat and Yavas, 2005; Hatemi-J and Roca, 2006). Emerging markets appear to offer good opportunities for diversification, as shown by Tunaru *et al.*, (2006) for China and by Dunis and Shannon (2005) for India, Malaysia, Indonesia, and Taiwan.

Home bias

Home bias describes the phenomenon whereby investors hold a vast majority of their portfolios in domestic assets even though they could theoretically achieve a better mean-variance trade-off by diversifying internationally (French and Poterba, 1991; Tesar and Werner, 1995).¹ Despite the difficulties involved in measuring home bias, a number of papers have made the attempt to assess its size empirically and show that it has declined over time, although not completely (Sørensen *et al.*, 2005; Swiston, 2005). The downward trend in home bias can be attributed, at least in part, to falling information costs (Ahearne *et al.*, 2004; Faruqee *et al.*, 2004; and Portes *et al.*, 2005). With information costs likely to decline further in the coming years, the downward trend in home bias can be expected to continue.

1. Cai and Warnock (2005) argue that home bias could be weaker than typically thought since investors generate "home-grown" international exposure by investing in domestic firms that are diversified internationally.

2.2 International differences in asset returns

14. The strong growth in the size of gross international portfolio holdings in recent decades has raised the extent to which economies are exposed to exchange rate and international asset price fluctuations. Financial market disturbances such as the emerging market crises of the 1990s could thus have a much greater impact on the world economy today than at the time of the crises. Given the stronger financial linkages between OECD and non-OECD economies, such events may also have macroeconomic consequences for the OECD.

15. The growth of international portfolio holdings also implies that a given rate of return differential between the assets and liabilities of a country or region now has a much larger effect on the dynamics of its net foreign investment position. For example, the United States has, until recently, had a positive international investment income balance despite rising net liabilities to the rest of the world, with the returns earned on (smaller) US foreign assets more than offsetting the returns paid on (larger) US foreign liabilities. With portfolios likely to continue to increase in size over time, differences in relative returns, as well as valuation effects, could become larger still.

16. Total returns consist of two components, measured yields and valuation adjustments to existing assets and liabilities associated with asset price and currency fluctuations. Figure 11 illustrates the measured yield differential between assets and liabilities for the OECD and non-OECD economies. Over the period 1995 to 2004, the OECD in general earned a higher yield on its assets than it paid on its liabilities, whereas non-OECD economies persistently earned a lower yield on their assets than they paid on their liabilities. On top of these measured return differentials come valuation gains that, for some countries, have been sizeable. For the United States, for example, Meredith (2007) estimates that the valuation gains on existing assets and liabilities amounted to 2% of GDP over the period 1996 to 2005.

17. One factor behind the positive return differential enjoyed by the OECD economies is the tendency of countries with well-developed financial markets to invest in higher-risk financial assets overseas in expectation of higher returns, be it in the form of investment income or capital gains. As such, financial outflows of the OECD in recent years were predominantly associated with high-yield FDI and foreign equity investment. Financial inflows, especially to the United States, were on the contrary associated with purchases of low-risk securities such as government and corporate bonds, and the build-up of official reserve holdings by foreign governments.¹⁰ A continuation of these investment patterns should help to maintain the present differential between the returns on international assets held by OECD countries relative to those on the assets held by non-OECD countries.

2.3 *Growth and income convergence*

18. The recent past has seen a period of comparatively rapid global economic growth. World GDP growth averaged 4% per annum during 1995 to 2005, compared with 3% per annum during 1980 to 1994 (see Figure 12). Developments in non-OECD economies have steadily become a more important influence on global economic growth than in the past, reflecting their strong growth and rising share in world GDP (see Figure 13). Economic growth was particularly strong in China and several other Asian economies, in spite of the temporary setbacks associated with the regional crisis in the late 1990s.

19. GDP per capita also rose more rapidly in the non-OECD economies than in the OECD (Figure 14). In particular, there was a marked improvement in per capita output in China, with GDP per capita estimated to have risen from 14% of the OECD average in 1995 to 25% by 2005. The exceptional performance of China is also illustrated in Figure 15 which compares the relative position of several non-OECD regions and countries in 1995 with that in 2005. China is the farthest above the diagonal line, highlighting its fast catch-up.¹¹

20. Several empirical studies have investigated the extent to which the process of economic integration has contributed to the convergence of output per capita. Although trade and financial openness are generally found to be an important influence on economic growth and income convergence, the benefits do not accrue automatically, especially in developing economies. Besides proper institutions and a conducive macroeconomic environment, investments in human capital and R&D are stressed as important factors in enabling economies to benefit from increased openness. Both raise an economy's absorptive capacity and thus facilitate the absorption of foreign technology (see Box 2 for further details).

10. Gourinchas and Rey (2005) demonstrate for the United States that although this composition effect gained in importance in recent years, it was not the main source of its positive total return differentials. Instead, the United States earned higher returns on its assets than it paid on its liabilities within each single asset class.

11. Russia is a special case given the considerable fall in its per capita output during the early 1990s.

Box 2. The growth effects of openness

International openness has been found to be an important influence on economic growth and the convergence of per capita output in a large number of different studies (for example, Frankel and Romer, 1999; OECD, 2003; Keller, 2004; Dollar and Kraay, 2004), with openness being particularly beneficial to lower income economies (Rassekh, 2006).¹ Two important channels are international trade and foreign direct investment.

Trade can help to promote a more efficient allocation of resources by enabling countries to specialise in activities in which they have a comparative advantage. Access to international product markets also allows firms to exploit economies of scale, and exposes them to more intensive product market competition both at home and abroad, forcing them to reduce inefficiencies (Nickell, 1996). International trade can also help to promote economic growth via international technology diffusion (see, for example, Grossman and Helpman, 1991; and Ben-David and Loewy, 1997, 2000). Trade in intermediate goods may also facilitate technology transfer, as employing a foreign intermediate good in final-output production involves the implicit usage of the technology embodied in the good (Eaton and Kortum, 2002). Empirical support for this hypothesis is found by Coe and Helpman (1995) and, for developing economies, by Coe *et al.*, (1997).²

Foreign direct investment is also seen as a major source of technology diffusion (Romer, 1993; Barrell and Pain, 1997; Markusen and Venables, 1999).³ Multinational enterprises might also generate technological learning externalities for domestic firms through labour training and turnover (Fosfuri *et al.*, 2001) or through the provision of high-quality intermediate inputs (Rodríguez-Claré, 1996).

Although the empirical literature supports the notion that FDI encourages technology spillovers (Barrell and Pain, 1997), no consensus has been reached on the magnitude of the effect (see Blomström *et al.*, 2000, and Keller, 2004). For example, while Keller and Yeaple's (2005) study of the United States suggests that FDI spillovers are substantial (a 1 percentage point increase in an industry's import share and its share of foreign-affiliate employment are estimated to raise TFP growth in that industry by 0.52% and 1.24%, respectively), Haskel *et al.*, (2002) and Griffith *et al.*, (2003) conclude that FDI spillovers are fairly small.

Although openness may be a prerequisite for sustained growth it is by no means sufficient in itself. In order to fully benefit from the merits of openness a country must complement openness by investments in human capital and R&D, proper institutions, and a conducive macroeconomic environment (Borenzstein *et al.*, 1998; Chang *et al.*, 2005).

Investments in human capital and R&D raise the absorptive capacity of a country and thereby enable it to successfully adopt foreign technology. Empirical support for the importance of human capital for technology diffusion is, for example, provided by Eaton and Kortum (1996) and Kwark and Shyn (2006). Eaton and Kortum (1996) demonstrate for a cross-section of 19 OECD countries that human capital, measured by the years of schooling, raises the ability of a country to absorb foreign technology. Kwark and Shyn (2006) show for a panel of 103 industrial and developing countries that the effects of foreign R&D on total factor productivity are larger the more educated the labour force is. Griffith *et al.*, (2000) find that conditional on a country having a certain productivity gap to the leader country productivity growth is increasing in its R&D expenditures, suggesting that R&D plays an important role in providing the necessary skills for the absorption of foreign technology.

1. A number of authors argue, however, that the estimated impact is sensitive to the variables measuring openness and to the precise specification of the estimated equation (for example, Pritchett, 1996; and Rodríguez and Rodrik, 2001).
2. For example, Coe *et al.*, (1997) estimate that a 1 percentage point rise in the ratio of imports of machinery and equipment from industrial countries to GDP raises total factor productivity in developing countries by between 0.2% and 0.5%. This positive impact of imports on productivity is found to accrue indirectly via the impact of imports on technology diffusion.
3. The gains arising from an alleviation of domestic capital shortages are likely to be limited (Gourinchas and Jeanne, 2006).

Box 3. Estimates of GDP per capita convergence

A system of equations is estimated that takes the following general form:¹

$$\Delta \log(GDPCAP_{it}) = a_{1i} + (a_{2i} + a_{3i} OPEN_{i,t-1}) \log(GDPCAP_{USA,t-1}/GDPCAP_{i,t-1}) + \varepsilon_{it}.$$

Here, the subscript i denotes the country, the subscript t the time period, $GDPCAP$ is GDP per capita in PPP US dollars, $OPEN$ is trade openness measured as $OPEN = (0.5 \text{ exports} + 0.5 \text{ imports}) / GDP$, and ε is an error term. The system of equations is estimated with least squares. The data set comprises annual data over the period 1960 to 2005, although data limitations require that the sample period starts later for some regions/countries, leading to an unbalanced panel data set. To obtain a parsimonious model, the parameters are restricted subsequently to be equal across subsets of countries/regions as the data permit. These restrictions are accepted by the data at conventional levels of significance. It should be noted that the groups that are formed are based on statistical criteria and do not necessarily have a direct economic interpretation. Moreover, a number of dummy variables are included in the specification to account for country-specific structural breaks in the estimated relationship. These breaks could be related to structural reforms in some of the countries.

The specification implies that each country has an equilibrium level of per capita output relative to the United States which is contingent on underlying structural factors. The annual change in per capita output will be affected in part by its current per capita output relative to that of the United States. The specification also allows for the impact of openness on the speed of convergence, with more open economies being expected to experience faster convergence towards their conditional long-run equilibrium position as they are more likely to benefit from productivity spillovers from the rest of the world. Although the openness variable measures trade openness, it is likely to capture other aspects of economic openness as well, given the positive correlations between trade and financial openness.

The detailed estimation results reported in Table 1 suggest that poorer countries experience faster output growth rates than richer countries as indicated by a positive value of the term $a_{2i} + a_{3i} OPEN_{i,t-1}$.³ For example, in the case of China the size of the estimated coefficients signifies that at current openness levels and at the current level of per capita output in the United States, 6.2% of the per capita output gap to the conditional long-run equilibrium position would be corrected each year. This implies that in 11 years time half of the adjustment to the long-run equilibrium would have taken place.⁴

The estimation also supports the view that more open economies converge faster to the underlying equilibrium position, as the coefficient on openness is significantly positive for all countries/regions. The coefficient on openness is equal to 0.03 for all countries/regions, implying that a 10 percentage point increase in openness would increase the rate of per capita output convergence to the new conditional equilibrium by 0.3 percentage points per annum. For China, the convergence rate would rise to 6.5% per year, reducing the time taken for half of the adjustment to the equilibrium by about half a year.

The estimated equations are used in section 3 of the paper to project per capita output to 2025, employing the globalisation baseline projections for openness and per capita output in the United States. Given these assumptions, per capita output in the non-OECD economies would be projected to catch up considerably to that in the United States, with the catch-up being the most pronounced for China and non-OECD Europe. Output per capita in the Euro area and Japan relative to that in the United States would remain broadly constant, implying some improvement compared with the recent past.

1. The framework applied in this analysis is consistent with prior work on economic growth carried out within the OECD (see OECD, 2003). It slightly differs from that earlier work in that the focus is on openness (thus ignoring other important determinants of economic growth) and its role for adjustment speeds rather than output levels.
2. Intra-regional trade flows are included for all groups of economies except for the euro area. Some care is required in interpreting the estimation results below, since measured openness could rise even if the respective groups did not collectively trade more with other economies.
3. For the rest of OECD Europe the model does not fit well. A potential explanation for this lack of fit is the diversity of the group as it combines countries with very different per capita output levels (within the group, the United Kingdom and Turkey have the highest (population) weights).
4. The model yields a non-linear adjustment path to the new long-run equilibrium so that the rate of adjustment slows down over time.

21. To help judge the scope for future convergence in per capita incomes a set of simple convergence equations was estimated for nine different economic regions (Box 3 and Table 1), reflecting the geographical structure of the preliminary version of the new global macro-econometric model currently being developed at the OECD (see Annex A).¹²

22. One important finding is that poorer regions/countries can experience faster GDP per capita growth rates than richer ones for some time, even if in the long-run the levels of per capita output differ. Moreover, more open economies experience faster convergence to the technological leader (in this instance, the United States). This supports the proposition that more open economies benefit from technology spillovers from foreign countries and thus achieve higher economic growth. The estimation suggests that at current openness levels and at the current level of GDP per capita in the United States, half of the expected adjustment towards its long-run GDP per capita level relative to the United States (which is contingent on given structural factors) would have taken place within the next ten years for most countries. On average, raising openness by 10 percentage points would reduce the time taken for adjustment by 5%.

2.4 *Global imbalances*

23. The strong economic growth experienced in recent years led to rising demand for commodities, thereby raising several commodity prices towards or past historical peaks in real terms. Non-OECD economies have been the main driver behind the increase in demand as they have experienced above-average output growth rates and at the same time have a higher level of energy consumption per unit of incremental output than the average OECD economy (see Pain *et al.*, 2006, for a more detailed discussion).

24. The associated increases in the terms of trade of the major oil producers have contributed to the increase in global current account imbalances in recent years, with the United States having a sizable current account deficit and a number of countries in East Asia and the Middle East having rising current account surpluses (OECD, 2006). These imbalances have been matched by corresponding changes in net foreign asset positions, although as discussed above, especially in the case of the United States, this has been partially offset by revaluation effects, stemming from movements in exchange rates and asset prices.

3. **Long-term scenarios to 2025**

25. Looking forward, this section discusses a number of important macroeconomic aspects of two alternative long-term scenarios for the world economy out to 2025. These scenarios embody two possible future paths for the extent of globalisation. One possibility, reflected in the first scenario, is for current trends to continue, with considerably enhanced future levels of global trade and capital flows, broadly in line with the trends seen over the recent past. With GDP per capita levels in most non-OECD economies still far below those in the OECD, there is a large potential for catching-up which may translate into a prolonged period of profound economic growth. An alternative possibility is that social, political, and environmental concerns associated with ongoing globalisation may lead to pressures to slow down the trend towards greater global integration. This is reflected in the second scenario, which shows a modest slowing in the trend towards continued globalisation. Both scenarios provide insights about possible future

12. For the OECD, projections are made for the United States, Japan, the Euro area, other OECD Europe and the rest of the OECD. Amongst the non-OECD economies, China is separately identified, with the remaining economies being partitioned into three blocs -- the rest of non-OECD Asia (ASI), non-OECD Europe and the rest of the non-OECD (AFMLAT). The latter bloc includes Africa, the Middle East and Latin America. The choice of the aggregate blocs predominantly reflects the prevailing patterns of global trade linkages, with particularly strong cross-border linkages amongst countries within Europe and countries within Pacific-Asia.

economic growth and development, the associated evolution of cross-border trade and capital market linkages and some of the policy settings that may be associated with such outcomes.

Box 4. Key assumptions in the continued globalisation scenario

The key assumptions imposed in the continued globalisation scenario include:

- The gaps between actual and potential GDP are eliminated over the projection period for all OECD countries, so that the level and growth of GDP return to estimated potential rates (as defined by the underlying supply-side assumptions).
- Population in the different economies is assumed to grow at the mid-range of the current UN population projections out to 2025. Almost all of this growth occurs in the non-OECD economies. In three of the economies considered -- the euro area, Japan and non-OECD Europe, the aggregate population is projected to begin declining before the end of the scenario horizon. The ageing of the population brings about earlier and more substantial declines in the working age population in these regions during the scenario period. There is also expected to be a small decline in the number of people aged 15-64 in China towards the end of the scenario horizon. The rate of growth in the working age population in the United States, other OECD Europe and the rest of the OECD is expected to remain positive through the projection period, as it is in the rest of non-OECD Asia and in Africa, the Middle East and Latin America.
- Average trend labour productivity growth in the United States, Japan and the euro area is assumed to eventually converge to a common rate of 1¼ per cent per annum over 2020-25, compared with initial growth rates of 2, 2¼ and 1¼ per cent per annum over 2005-10. Further details on the supply side assumptions of the continued globalisation scenario can be found in Table 2. In contrast, productivity growth in the two other OECD country groups remains between 2¼-2½ per cent per annum throughout the scenario, reflecting the greater scope for catch-up in some of the countries within these groups.
- For the non-OECD economies, productivity growth in the near future is assumed to continue at similar rates to those seen over the past five years, helped by further structural reforms to improve efficiency, as well as capital deepening and enhanced knowledge transfers from the continued growth in trade openness and inward FDI. In some countries the gradual movement of workers from the primary sector into secondary and tertiary sectors could also have a positive one-time effect on productivity levels (OECD, 2005).
- Unemployment returns to its estimated structural rate (the NAIRU) in the OECD economies. For all economies, with the exception of the United States, the NAIRU is assumed to decline a little over the course of the continued globalisation scenario, reflecting increased competition as a result of greater openness as well as the full impact of recent structural labour market reforms (Bassanini and Duval, 2006). These reforms are also assumed to bring about a modest rise in labour force participation rates in most of the OECD economies.
- Individual commodity prices are assumed to follow specific profiles that are broadly consistent with the implications of the econometric equations in Pain *et al.*, (2006). With economic growth per annum in the non-OECD economies being over 2 percentage points higher than growth in the OECD economies, oil prices are assumed to rise by 1½ per cent per year in real terms. In contrast, metals and minerals prices are held constant in real terms, whilst food and agricultural raw materials prices are assumed to decline by between ½-1 per cent per annum in real terms.
- Equity prices are assumed to rise by 4% per annum in the OECD economies, and by 7% in the non-OECD economies, broadly in line with average productivity growth differentials.
- The bilateral nominal exchange rates of the non-OECD economies with the OECD economies are assumed to appreciate by 3% per annum over the projection period from their levels in 2006, approximately in line with average productivity growth differentials. The decision to start from actual exchange rate levels rather than some underlying equilibrium levels reflects the difficulties involved in estimating equilibrium exchange rates with precision (see, for example, Driver and Westaway, 2005).

- Monetary policies are directed at keeping inflation low, or bringing it into line with medium-term objectives. Effective direct tax rates on households are assumed to adjust so as to stabilise the government debt to GDP ratio in the medium-term, with the particular adjustments for each economy reflecting the initial fiscal position and the need to prevent the net general government debt to GDP ratio from changing substantially. No allowance is made for possible supply-side repercussions stemming from changes in tax rates.

To develop estimates of the future evolution of international asset stocks several assumptions are required, including ones for the underlying rate of gross capital flows (the flows that would occur even if the current account were balanced), the asset composition of such flows and the locations in which they are held. Asset stocks are split into three components for the scenarios, comprising FDI, equity assets and a residual category that includes debt holdings, banking sector assets and official reserves.

- Current account surpluses (deficits) are assumed to flow entirely into the stock of residual assets (liabilities).
- Stocks of equity assets/liabilities in the OECD are subject to upward revaluations of 4% per year; equity stocks in the non-OECD are subject to upward revaluations of 7% per year. The US dollar value of all assets and liabilities held in the currencies of non-OECD countries is also revalued upwards by 3% per annum, reflecting the nominal exchange rate appreciation for the non-OECD countries. On average over the scenario horizon, approximately 20% of all assets are invested in the non-OECD countries.
- Underlying capital flows as a percentage of GDP are initially set in line with average levels in the recent past. Their subsequent path differs across economies. The United States is assumed to already be a financially globalised economy, and so underlying capital flows remain at 7% of GDP per annum throughout the scenario. The European economies are currently undergoing a period of rapid financial globalisation, with underlying capital flows in excess of 10% of GDP in the euro area, and around 20% in the rest of the European economies in the OECD. Over time, these rates are assumed to slow gradually to the levels seen currently in the United States. Japan, although it has steadily accumulated international assets as a result of sustained surpluses on the current account, has a low level of underlying capital flows. Over the scenario it is assumed to rise from an initial level of 2% of GDP per annum up to 7% of GDP by 2025. The overall impact of these assumptions is to help bring about a partial convergence in the level of international asset and liability holdings over time.
- Capital markets in the non-OECD economies are assumed to become increasingly liberalised over the course of the scenario, with underlying gross capital flows rising from an 8% of GDP average over the recent past and the early part of the scenario to around 11% of GDP by 2025.

26. The two long-term scenarios were prepared using a framework broadly similar to that outlined by Beffy *et al.*, (2006) for the OECD Medium-Term Baseline. In this framework economic growth is ultimately determined by supply-side factors such as demography, labour force participation, trend hours worked and productivity growth. Monetary and fiscal policies are assumed to be set to achieve medium-term monetary objectives and fiscal sustainability respectively. Global trade linkages for both prices and volumes are endogenous, as is the future evolution of financial domestic and international asset stocks, the latter being conditional on specific assumptions about the pace of international financial integration. The projections are two representative descriptions of possible long-run changes in the global economy. Given their reliance on specific assumptions and abstraction from possible cyclical events, neither of the scenarios can be seen as a central forecast with specific probabilities. The key assumptions made in the continued globalisation scenario are summarised in Box 4. A number of these are amended in the alternative scenario, as discussed in Section 3.3.

3.2 *The continued globalisation scenario*

3.2.1 *Output growth and output per capita*

27. The continued globalisation scenario embodies a sustained period of comparatively robust growth in the world economy, with global GDP increasing by an average of 4¼ per cent per annum when expressed in constant prices at purchasing power parities (PPPs), as shown in Tables 3 and 4.^{13,14} Global output growth over the first decade of the scenario (2006-15) is just under around ½ percentage point higher per annum than in the subsequent decade (2016-25), reflecting the gradual moderation of productivity growth and slower labour force growth in many economies during the latter decade.

28. Within the OECD, the annual GDP growth of the United States and the other OECD Europe and rest of the OECD groups is projected to be about 1 percentage point above that of the euro area and Japan, largely as a result of demographic factors. Amongst the non-OECD, GDP growth is projected to be more robust in China and the rest of non-OECD Asia than elsewhere, reflecting stronger productivity growth and corresponding to generally higher levels of international openness.

29. Over the course of the scenario global economic conditions become increasingly influenced by developments in the non-OECD economies, whose share of global output is projected to rise from just over two-fifths in 2005, to around three-fifths by 2025 (at PPP exchange rates). This acts to raise GDP per capita in the non-OECD economies relative to those in the OECD economies, which grow by an average 2% per annum.

30. The evolution of per capita output in the individual economies is summarised in the middle panel in Table 2 and Figure 16. In the euro area and Japan, per capita output relative to the United States declines by 3-5 percentage points over the scenario period, largely reflecting differences in dependency trends. Output per capita in the remaining OECD zones broadly grows in line with that in the United States. Amongst the non-OECD, per capita output in China and non-OECD Europe rises significantly relative to that in the OECD economies, reflecting the continuation of robust output growth at a time when there is limited growth in their overall populations. Per capita output in the rest of non-OECD Asia also rises, but more modestly. In Africa, the Middle East and Latin America there is little convergence, reflecting comparatively modest productivity growth and continued population growth.

31. A comparison of the scenario projections for per capita output with those from the econometric convergence equations in Box 3 is shown in Figure 17. The separate convergence model projections show the implied path of per capita output in each economy given the scenario estimates of trade openness and per capita output in the United States. Overall, the path implied by the convergence equations is broadly similar to that in the scenario, with the exception of other OECD Europe and China, where per capita output levels in the scenario are respectively lower and higher than the levels obtained from the convergence model.

13. Measured in constant US dollars, annual GDP growth is over 1 percentage point lower, reflecting the greater weight given to the faster growing non-OECD economies when using PPPs.

14. Volume data are converted into PPP US\$ by using the PPP rates of 2000. To convert value data into PPP US\$, moving PPP rates are used that are projected out to 2025 consistent with relative price movements (a detailed discussion of the usage of purchasing power parities for converting volume and value data can be found in Schreyer and Koechlin, 2002). In interpreting data expressed in PPP terms, it should be kept in mind that PPPs are generally rather difficult to measure precisely for non-OECD economies (see OECD, 2005, for a discussion).

32. The overall gains in real income for the OECD economies will also depend on net investment income flows and movements in the aggregate terms of trade (Sefton and Weale, 2006). All of the OECD economies are expected to have modest declines in their terms of trade, primarily because of the increase in real oil prices that results from strong demand growth in the non-OECD economies. The evolution of net investment income largely reflects the evolution of net international assets; the United States and, to a lesser extent, the rest of the OECD group make positive net investment income payments, reflecting their negative net asset position. But Japan and the other OECD Europe group have rising net investment income, reflecting improvements in their respective net asset positions. This raises real incomes a little in these economies.

3.2.2 *Global trade and current accounts*

33. World trade integration is projected to continue at a rapid pace throughout the scenario. With GDP growth in the non-OECD being well above that in the OECD, the share of the non-OECD economies in total world trade will rise markedly by 2025. As shown in Figure 18, in volume terms their share in total world trade is set to increase from just under one-third in 2005 to over one-half by 2025. This development would continue the trend over the past decade with the trade share of the non-OECD regions in total world trade having risen by 5 percentage points between 1995 and 2005. The rising importance of non-OECD regions in world trade is primarily driven by China, whose trade share rises from 6% in 2005 to over 17% by 2025.

34. These developments are also reflected in the export performance of the various regions, with performance measured by the ratio of export volumes to export market size. All of the OECD regions are projected to having gradual declines in export performance, while most of the non-OECD regions are projected to have an improvement. This is especially marked for China, with export volumes rising by almost twice the rate of export market growth. Of the non-OECD economies, only the rest of non-OECD Asia experiences a small deterioration in export performance, which can be interpreted as reflecting the extent to which some companies in the region lose market share to Chinese competitors.¹⁵ For the OECD countries, the decline in market share is projected to be more pronounced for Japan and the euro area than elsewhere.

35. The growth of oil prices in real terms and the declines in the real prices of agricultural commodities also affect the terms of trade of all the economies, with those OECD regions that include major oil exporters facing the smallest terms-of-trade losses and oil-exporting non-OECD regions seeing the strongest terms-of-trade improvements. The terms of trade of non-OECD Europe, which includes Russia and countries of the former Soviet Union, and Africa, the Middle East and Latin America, which includes oil-producers in the Middle East and Latin America, rise by 14 and 10%, respectively, in the main scenario.

3.2.3 *Global capital markets*

36. The scenario is characterised by further rapid growth in global financial integration, with the sum of international assets and liabilities projected to rise from 240% of global GDP in 2005 to 350% of GDP by 2025 (Figure 19). Given the assumptions made about the growth of capital flows, the relative returns on assets in different locations and the profile of current account imbalances, the non-OECD regions would hold a higher share of total world assets and liabilities in 2025 than in 2005 (see Table 5 and Figures 20 and 21). By 2025, non-OECD regions would account for close to two-fifths of total world assets and one-third of total world liabilities (compared to just under 15% in 2005). In particular, the importance of China

15. See Rodrik (2006) for an extensive discussion of the impact of China's growth on other countries in East Asia.

in international capital markets would have risen significantly, with gross holdings of 12% of total international financial assets and 8% of total international financial liabilities by 2025.¹⁶

37. As shown in Table 5, the proportion of assets and liabilities held by the non-OECD economies rises for each different category of investment. On the asset side, there is a significant rise in the share of non-equity, non-FDI assets held by the non-OECD economies, reflecting in part their accumulated current account surpluses.¹⁷ On the liability side, there is projected to be significant growth of foreign direct investment into the non-OECD economies, with their share in total world holdings more than tripling between 2005 and 2025. By 2025, over half the global stock of inward FDI is expected to be in the non-OECD economies,¹⁸ with over 30% being in the non-OECD economies in Asia. This would imply a considerable rise in the level of knowledge transfers to domestic companies in the non-OECD.

38. Valuation effects are found to have an important effect on the evolution of net foreign asset positions (Figure 22). In general, the non-OECD economies have negative revaluation effects, reflecting their faster rate of equity price growth and nominal exchange rate appreciations, while the OECD countries benefit from positive revaluation gains on their net foreign assets. Indeed, the accumulated valuation effects for the United States are equivalent to 10% of GDP by 2025, so that net international liabilities rise to only 65% of GDP by then, rather than the 75% of GDP that would have resulted from taking net liabilities in 2005 and adding on the cumulated current deficits over 2006-25.

39. Japan and China also experience significant valuation adjustments, but of very different kinds. Japan has current account surpluses more or less throughout the scenario, and the resulting accumulation of international assets is reinforced by favourable valuation effects.¹⁹ In contrast, in China, which also has a current account surplus through much of the scenario period, the associated improvement in net international assets is moderated and ultimately almost offset by unfavourable valuation effects. A similar tendency for net international assets to decline can be seen in other non-OECD economies as well (Figure 22). The unfavourable valuation effects in the non-OECD economies stem from two main sources. First, the continual appreciation of the nominal exchange rate acts to reduce the domestic currency value of foreign assets held by domestic residents. In addition, equity prices are assumed to rise more rapidly in the non-OECD economies than in the OECD.²⁰

40. Going forward, the emerging constellation of current and capital balances will continue to be influenced by globalisation. As regards the sustainability of a continued large US current account deficit,

16. The respective ratios of assets and liabilities to GDP both tend towards 125% of GDP in all the non-OECD economies given the assumptions made about the rate of average gross capital flows over the scenario. The profile for the rest of non-OECD Asia is different from that of the other non-OECD economies. This mainly reflects the fact that the ratio of assets and liabilities to GDP is much higher than in other non-OECD groups at the start of the baseline. However, recent flows (as a percentage of GDP) are not, and so, the asset and liability levels tend to converge to a similar number to those for China and Africa, the Middle East and Latin America.

17. China is also projected to become the world's second largest FDI holder by 2025 (about 15% of the world total) after the United States (approximately 15½ per cent of the world total).

18. This partially reflects the younger age of FDI in the non-OECD economies, with such investments typically being recorded in book values (adjusted for currency movements) rather than at current market values.

19. It is possible that the accumulation of overseas assets could generate stronger growth in domestic demand than shown in the scenario. If associated with a weaker current account surplus, this would help to moderate the build-up in net international assets.

20. Ultimately, such differences are unlikely to persist.

the effect of globalisation will involve two counteracting forces. Rapid economic growth and financial integration will increase the global pool of funds that can be invested, including in US liabilities. Against this, the share of portfolios that investors would wish to hold in US liabilities is likely to diminish as the US economy is set to decline as a share of the world economy. Given that US financial markets currently enjoy an advantage in terms of depth and efficiency, the first of these forces may have a stronger influence in the near to medium term. The continued globalisation scenario suggests that, under a number of assumptions a large US current account deficit could be consistent with the United States retaining broadly the same share of world foreign liability holdings in 2025 as in 2005 despite continued large net capital inflows.

41. The scenario also implies a continuation of current trends in that China and other developing countries running current account surpluses would get very low returns on their foreign assets. Taking the example of China, net foreign assets as a ratio to GDP would as a result fall from just under 507% of GDP in 2015 to around 40% in 2025. Faced with this prospect, and because the US weight in the world economy is gradually diminishing, China and other developing countries running current account surpluses may at some point choose to reduce the share of US liabilities in their portfolios. If this occurs, such a rebalancing will require a lower US capital account surplus, which could result in a disorderly adjustment in financial markets.

3.2.4 *Macroeconomic policy settings*

42. For simplicity, all the OECD economies are assumed to have a medium-term monetary objective of a 2% annual inflation rate. Policy interest rates are set at levels which ensure that this objective is satisfied. The yield curve is upward-sloping in all economies, with interest rates on long-term government bonds settling at 75 basis points above shorter-term money market rates. By the end of the scenario horizon, the level of short-term interest rates varies from 3½ per cent in Japan to 5% in the United States. Such settings serve to ensure that the real short-term interest rate is approximately in line with the growth rates of output in the different OECD economies. The marked divergence in the output growth rates across the OECD economies suffices to offset underlying pressures for the equalisation of (expected) real interest rates in an increasingly open global capital market. Non-OECD economies are assumed to have an inflation rate of about 3% to 4%.

43. Fiscal policy settings differ across the separate OECD economies. In the United States, an annual budget deficit of 3% of GDP is consistent with the general government net debt to GDP ratio remaining approximately constant throughout the scenario. Japan has the same budget deficit to GDP ratio as the United States, even though this still leaves the stabilised debt to GDP ratio at almost twice the level in the United States in 2025. The euro area has an annual budget deficit of a size needed to bring gross government debt within the Maastricht objective of 60% of GDP; this is achieved with an annual deficit of just under 1½ per cent of GDP. The remaining two OECD country groups have a budget surplus at the start of the scenario and are assumed to move back gradually to having a small budget deficit of around ¼ per cent of GDP over the course of the projection period, broadly consistent with a small negative, or even a positive public sector position.

44. The main budgetary pressures come from the likely growth of public expenditure as a result of demographic changes that lead to a rise in the ratio of the dependent population to the working-age population. Ageing-related pressures on public expenditure are likely to be reflected in health-care expenditures as well as in public transfers; in the scenario the pressures are represented exclusively on the transfer side, with public consumption and investment stable as a share of GDP. In the average OECD economy transfer expenditures are projected to rise by some 3% of GDP over the course of the scenario OECD (2007).

45. It is assumed that pressures that would further raise the size of budget deficits are offset by increases in the effective direct tax rate on household incomes. The need to achieve the specified budgetary outcomes induces increases in the effective tax rate of 3½-4 percentage points in the United States and the euro area, and 6 percentage points in Japan over the scenario horizon. The remaining two OECD groups can be seen as ones in which the impact of rising dependency rates is partially offset by the move from budget surplus to budget deficit. The effective direct tax rate on household incomes is broadly flat in these regions throughout the scenario.

Box 5. Key assumptions in the moderated globalisation scenario

Demographic assumptions, fiscal and monetary policy objectives and the evolution of output gaps remain as set out in Box 4. Other key assumptions vary from those used in the first scenario. The changes include:

- Annual trend labour productivity growth throughout the OECD is assumed to be ¼ per cent per annum lower than in the first scenario, reflecting a lower level of openness to trade and FDI (OECD, 2003). Annual productivity growth is lowered by ½ per cent per annum in all the non-OECD economies in the scenario with moderated globalisation, reflecting the larger potential cost for these economies from a reduced level of international openness.
- The structural rate of unemployment in the OECD economies is approximately ½ percentage point higher than in the first scenario, reflecting the lower level of product market competition in the second scenario. Table 6 provides full details on the revised supply-side assumptions.
- Individual commodity prices are assumed to follow specific profiles that are broadly consistent with the implications of the econometric equations in Pain *et al.*, (2006). With economic growth per annum being reduced in the second scenario, oil prices are now held constant in real terms.
- Equity prices are now assumed to rise by 3¾ per cent per annum in the OECD economies, and by 6½ per cent in the non-OECD economies, and the bilateral nominal exchange rates of the non-OECD economies with the OECD economies are now assumed to appreciate by 2¾ per cent per annum, reflecting the revisions to average productivity growth per annum. There are corresponding changes in the rate of revaluations to the stocks of international assets and liabilities.
- In the moderated globalisation scenario, the level of underlying capital flows is reduced considerably, ending up between 4-5% of GDP for most OECD economies and between 5-7% of GDP for most non-OECD economies. Japan is an exception, with underlying capital flows rising from 2% of GDP to 3½ per cent over the course of the scenario. Gross flows in the rest of non-OECD Asia are left unchanged from the first scenario, as asset and liability stocks would otherwise decline markedly as a share of GDP.

3.3 *The moderated globalisation scenario*

46. The relatively benign macroeconomic outcomes shown in the first scenario almost certainly require continued structural changes in the composition of output and employment in the OECD economies, reflecting the increasing integration of non-OECD economies into global trade and production networks. Such changes generate winners and losers, and it is possible that social and political concerns about income distributions, labour market outcomes and the environmental impact could act to moderate the pace of integration, even without the formal imposition of barriers to trade and capital movements. The second scenario explores the possible outcomes of a moderation in the future increase in globalisation.

47. The second scenario can be viewed as a possible configuration of the world economy in the event of a simultaneous slowing in the growth of output, trade and capital flows. The future increase in trade and financial integration is approximately half that in the first scenario. The magnitude of this slowing in the

prospective extent of globalisation is not meant to be indicative of the likely policy response to the current social and political concerns. Rather, the scenario is meant to provide an indication of the possible consequences of a deceleration in the globalisation process. Stronger (and weaker) reactions could be imagined, leading to correspondingly stronger (weaker) impacts on GDP growth and other macroeconomic outcomes.

48. The scenario is characterised by lower growth in both the OECD and the non-OECD economies, reflecting the revised supply-side assumptions (see Box 5 and Tables 7 and 8). Non-OECD countries lose relatively more from the moderation of globalisation than the OECD countries, so that their catch-up in terms of GDP per capita is slower (Table 9). Annual GDP per capita growth is on average $\frac{1}{4}$ percentage point lower in the OECD (measured at current prices and current PPPs) and $\frac{1}{2}$ percentage point lower in the non-OECD.²¹ These lower growth rates imply that in 2025, output per capita in the OECD is 7% below the level in the first scenario; non-OECD output per capita income are 11% lower.

49. Figure 23 compares the revised scenario projections for real output per capita with those from the econometric convergence equations. As in the first scenario, the path implied by the convergence equations is again broadly similar to that in the new scenario in all regions apart from other OECD Europe and China. The broad pattern of developments across economies remains similar to that in the first scenario, with China and the non-OECD Europe economies catching-up with the United States by rather more than the remaining non-OECD economies.

50. The second scenario is also characterised by lower growth in cross-border trade and financial flows. World trade as a share of GDP (in constant prices) is more than 30 percentage points lower than in the first scenario and world assets plus liabilities as a share of GDP are almost 60 percentage points lower (Figures 24 and 25). The differences are particularly pronounced for the non-OECD economies.

51. While the regional composition of trade in 2025 is broadly similar to the first scenario, the composition of asset and liability holdings has changed somewhat (Figures 26 and 27). The share of total global liabilities owed by the United States in 2025 is 2 percentage points higher than before, at 28%. If the extent of global integration in the future was to slow down much more markedly than shown, it is likely that the share of global liabilities owed by the United States would be higher still, raising the risk of an exchange rate adjustment to help correct growing global imbalances.²²

52. The composition by asset class projected for 2025 also differs across the two scenarios. Most notably, the stock of inward foreign direct investment in non-OECD economies as a share of GDP is more than 11 percentage points lower under the moderated globalisation scenario. Given that foreign direct investment is a major source of technology spillovers (see Box 2) these lower FDI inflows are consistent with the lower productivity growth experienced by non-OECD economies.

53. A slight tightening of the monetary stance in the United States generates a modest easing in inflation and higher short-term real interest rates. In other countries, interest rates remain unchanged from the first scenario; in consequence, government debt interest payments as a percentage of GDP are higher in the second scenario. This, together with higher transfer payments stemming from an increase in unemployment rates and slower growth of the tax base, requires an additional rise of 1-1½ percentage point in the effective tax rate on household incomes in all OECD economies to ensure the stability of the debt to GDP ratio.

21. The difference in annual GDP per capita growth of the world is higher than the one of the OECD in both 2006-2015 and 2016-2025, although this is not directly apparent in Tables 3 and 9 due to rounding.

22. As such, the outcome projected for 2025 may not materialise as market reactions could bring about an adjustment before the end of the projection horizon.

54. Overall, in spite of the small differences in assumptions between the first and second scenarios, it is clear that the future slowing of the increase in globalisation has visible detrimental effects. If protectionist pressures were to become stronger still, the resulting changes from the continued globalisation scenario would be considerably larger and could possibly appear more rapidly.

4. The impact of non-OECD economic developments on OECD economies

55. With the share of the non-OECD economies in the global economy expected to increase steadily out to 2025, and their cross-border trade and financial linkages with the OECD economies projected to deepen further, macroeconomic developments in the OECD economies are likely to be increasingly affected by those in the non-OECD economies.²³ This section contains an assessment of such spillovers, using selected simulations on the new global macro-econometric model currently being developed at the OECD. Identical simulations are conducted over ten-year intervals on the continued globalisation baseline discussed above, starting initially in 2005 and then in 2015. A brief overview of the new model is given in Annex A.

56. The first “shock” considered is an *ex-ante* rise of 1% in domestic demand in the non-OECD economies, maintained for ten years.²⁴ The second “shock” is of a loss of financial market confidence in the non-OECD economies, with rising interest rates in the non-OECD economies and a depreciation of their currencies against those of the OECD economies.²⁵ In all cases the impact on output in the OECD economies in the shocks beginning in 2015 is found to be approximately double that from the same shocks beginning in 2005.²⁶ The main factors behind this are that any given (percentage) changes in OECD exports to the non-OECD or in the value of OECD financial assets invested in the non-OECD are equivalent to a considerably larger share of OECD GDP in 2015 than at present.

57. To offset this, monetary policy in the OECD economies is likely to have to respond more quickly and more vigorously in the future to economic “shocks” in the non-OECD economies. The extent to which it becomes more responsive will vary across economies within the OECD, depending on the respective strengths of cross-border linkages with the non-OECD economies. A corollary of this is that monetary policy may need to respond less to domestic country-specific “shocks”, since stronger cross-border linkages ensure that a larger proportion of such “shocks” will have to be absorbed by foreign economies. Whilst globalisation has altered the impact of monetary policies in the OECD economies, it has not diminished their capacity to eventually stabilise the economies.

58. In all simulations short-term interest rates are determined by a Taylor rule, with rates moving to help stabilise price inflation when it is away from the baseline levels and/or when output gaps are not at baseline levels. Fiscal stability is ensured by varying the effective direct tax rate on households so as to

23. It is possible that cross-country spillovers may be more important for product specific shocks than for country specific shocks, given that the rise in international trade flows is driven in part by the international fragmentation of the production process.

24. Although in practice such a shock may occur over a much shorter time horizon, the simulation serves to illustrate the underlying forces at work.

25. The shocks discussed in this paper are meant to be illustrative not exhaustive. It could also be of interest to analyse shocks occurring in a specific country or region or shocks that mimic those experienced during the financial crises of the 1990s.

26. Although the precise magnitude of the impact will reflect the specific properties of the macroeconomic model to some extent, the general finding that a shock matters more in 2015 than it does in 2005 is unlikely to be contingent on the model used.

eliminate any deviation of public sector deficits (as a per cent of GDP) from their baseline levels. Nominal exchange rates are held as base levels unless otherwise specified.²⁷

4.1 Higher domestic demand in non-OECD countries

59. Private sector savings relative to GDP are comparatively high in many non-OECD economies at present. In part this can be attributed to a need for precautionary savings in the face of a limited social safety net at a time when traditional family-based redistribution plays a smaller role. Comparatively underdeveloped financial sectors also increase the need for precautionary savings. In time, it can be expected that such effects will begin to moderate, with the consequent reductions in household saving ratios then acting as a temporary demand stimulus. To illustrate the possible macroeconomic implications of a change of this type, an initial simulation was run of an *ex-ante* increase of 1% in domestic demand in all the non-OECD economies for ten years, with accompanying increases in non-OECD import volumes and equity prices.²⁸

60. In the long run, output returns to the baseline level in both the OECD and the non-OECD economies since the simulation does not involve a permanent change in potential output. In the shorter term, there is an increase in GDP, with an associated rise in output gaps, inflation and interest rates. The overall effects on GDP, short-term interest rates and export volumes are summarised in Figures 28-30, with additional detail given in Tables 10 and 11.

61. The overall effects on non-OECD GDP in the simulation beginning in 2005 are of a broadly similar magnitude to those in the simulation beginning ten years later. Non-OECD GDP rises by almost 1% in the first year of the simulation and then gradually returns towards baseline levels over the remainder of the simulation period, reflecting higher net imports and the extent to which the initial rise in domestic demand is offset by eventual declines in real incomes and rising real interest rates.

62. In contrast, the short-run impact on GDP levels in the OECD economies in the simulation beginning in 2015 is found to be approximately twice the size of that in the simulation beginning in 2005, although in both cases output returns to baseline levels by the end of the simulations (Figure 28). The demand “shock” in the non-OECD acts as a stimulus to the OECD economies by raising external demand for exports from the OECD, and by raising both the value of, and the returns from, the financial assets held by OECD economies in the non-OECD. These changes represent a larger share of OECD GDP in 2015 than in 2005, because of the growth over the intervening period in trade and financial assets relative to GDP. The value of the international assets held by the OECD economies rises by a peak of 3% in the simulation from 2015, compared with a peak increase of 2½ per cent in the simulation from 2005.²⁹

63. The impact of the higher level of output in the non-OECD economies differs across OECD economies. Japan, the United States and the rest of the OECD group receive the largest short-term stimulus to export volumes (Figure 30), reflecting their stronger trade ties with the non-OECD economies and, for the rest of the OECD group, their strong ties to developments in the United States. The European

27. This implies that the exchange rate does not respond to an exogenous shock and that any adjustment has to fall entirely on other variables in the model. This may act to magnify the extent to which interest rates have to adjust to stabilise price inflation.

28. The increase in domestic demand is an endogenous one, so that the resulting impacts on the rest of the economy feed back and affect the actual path of domestic demand relative to the baseline. The positive stimulus from domestic demand on equity prices in the non-OECD is assumed to outweigh the impact of rising interest rates on equity prices.

29. The valuation effects reflect changes in the value of assets held in OECD economies as well as those held in non-OECD economies.

economies receive a larger stimulus to private consumption than the other OECD economies because higher investment income from the non-OECD and increases in the value of investment assets in the non-OECD represent a bigger stimulus to the European economies. The rise in net investment income is, at its peak, worth around 0.2% of GDP in all the OECD economies, with the exception of the other OECD Europe group, where it is worth approximately 0.5% of GDP.³⁰

64. Monetary policy in the OECD economies is set to limit and eventually offset the inflationary pressures that rise as a result of stronger demand growth and positive output gaps. Short-term interest rates rise much more in the simulation from 2015 than in the simulation from 2005 (Figure 29), reflecting a greater need for stronger action to damp incipient inflationary pressures in the OECD economies in the second simulation. This arises because stronger output growth pushes output gaps further above baseline in the second simulation than in the first.

65. The fiscal rule initially generates a small decline in effective tax rates on households in the OECD countries, but after ten years, the effective rate is at or above baseline levels. In the short term, the positive stimulus to demand lowers unemployment and raises tax receipts. Thus effective tax rates decline a little in order to hold the fiscal balance at baseline levels. But in the longer term, the demand stimulus fades away, and higher interest rates raise government debt payments. Effective tax rates thus have to rise a little to ensure that the fiscal balance remains at baseline levels.

4.2 *A loss of financial market confidence in the non-OECD economies*

66. The globalisation scenario used as a baseline for the simulations contains a significant increase in the level of international assets invested in the non-OECD economies, associated with a sustained period of robust economic growth. If uncertainty about the prospective returns from investment in the non-OECD were to rise, for instance because of greater political risks, there would be some downward adjustments in the market valuation of assets held in the non-OECD economies. Such an event would be likely to be associated with higher nominal interest rates in the non-OECD economies, declines in equity prices and possibly a marked exchange rate depreciation, reflecting the impact of rising risk premia on non-OECD bond and equity prices, and the need for the exchange rates of the non-OECD economies to decline to levels from which they are expected to appreciate in the future.

67. The simulations seek to illustrate the mechanisms through which this might affect the OECD economies, and examine whether the effect of these mechanisms changes over time. The “shock” considered is, however, comparatively drawn out compared to the speed at which a real-time loss of confidence might be expected to occur. Short and long-term interest rates in the non-OECD economies are raised by 1 percentage point above baseline levels for ten years, adversely affecting domestic demand in these economies, and the nominal bilateral dollar exchange rate of each non-OECD economy is assumed to depreciate by 10%.³¹ The effective exchange rates of the OECD economies appreciate by 2-4½ per cent, depending on the extent to which they trade with and compete against the non-OECD economies. The largest currency appreciation is in Japan. Finally, the heightened uncertainty in financial markets is assumed to also be associated with a decline of 2% in equity prices in the OECD economies.

68. This shock acts to depress domestic demand in the non-OECD economies throughout the first ten years of the simulation, with demand being around 2% below baseline levels. However this is gradually offset by improvements in the volume of net trade in the non-OECD economies, helped by the initial depreciation of their nominal (and real) exchange rates. The improvement is limited as demand growth is

30. The ratio of international assets to GDP is higher for this group of economies than elsewhere (Figure 22).

31. This gives an effective exchange rate depreciation of less than 10% as the bilateral exchange rates between non-OECD economies are unchanged.

below base levels in the OECD economies. The overall effects on GDP, short-term interest rates and export volumes are summarised in Figures 31-33, with additional detail being available in Tables 12 and 13. The decline in GDP in the non-OECD economies is slightly less in the simulation beginning in 2015 than in the simulation beginning in 2005; this reflects the extent to which trade has risen relative to GDP. The improvement in net trade represents a larger share of GDP in 2015 than in 2005.

69. The OECD economies are hit by declines in the value of domestic equities and in the domestic currency values of financial assets held in the non-OECD economies, generating a negative wealth effect on domestic demand. On average, the value of net foreign assets is around 2½ per cent below baseline levels in the OECD economies. Incomes earned from investments in the non-OECD also decline. In addition, there is an initial loss of competitiveness because of the appreciation of effective exchange rates in the OECD economies; this reinforces the negative impact on exports stemming from the decline in external demand in the non-OECD economies. The combined impact of all these changes varies across the OECD economies, depending on the comparative importance of wealth effects and the extent to which net exports are adversely affected. Both of these factors are comparatively more important in the simulation from 2015 than in the one from 2005, again reflecting the growth of trade and financial assets relative to GDP that is embodied in the baseline.

70. On average, the negative short-term impact on the level of GDP in the OECD economies is around 50% higher in the simulation beginning in 2015 than in the simulation beginning in 2005. The shorter-term effects of the shock are approximately twice the size in the United States, Japan and the rest of the OECD group, reflecting both the comparative importance of trade with the non-OECD for these economies, and the greater impact of equity-related wealth effects on domestic demand in the United States. Ultimately, however, output is approximately back at base levels after ten years in all economies.

71. Monetary policy in the OECD economies responds to the shock so as to help bring inflation back to baseline levels in the medium term. The differences between the simulations in 2005 and 2015 are limited by the different monetary policy responses involved in the OECD economies. Short-term interest rates are reduced considerably more in the latter simulation, with interest rates declining by over 2 percentage points in the OECD economies on average. The associated declines in real short-term interest rates in both simulations also help to stabilise domestic demand in the OECD economies and eventually help to bring it back to, or even slightly above, base levels.

Table 1. Convergence equation estimates

Estimated equation: $\Delta \log(GDPCAP_{it}) = a_{1i} + (a_{2i} + a_{3i} OPEN_{i,t-1}) \log(GDPCAP_{USA,t-1}/GDPCAP_{i,t-1}) + \varepsilon_{it}$.			
	a_{1i}	a_{2i}	a_{3i}
Japan	-0.010 [0.094]	0.121 [0.000]	0.032 [0.002]
Euro area	-0.028 [0.000]		
Other non-OECD Asia	-0.322 [0.000]	0.000 [n.a.]	
Other OECD Europe	0.012 [0.000]	0.080 [0.000]	
Other OECD	-0.048 [0.001]	0.051 [0.000]	
Non-OECD Europe	-0.088 [0.000]		
China	-0.034 [0.218]		
Africa, the Middle East and Latin America	-0.111 [0.000]		

Note: The values in parentheses denote the p -values of exclusion restrictions on the respective coefficients.

Table 2. Supply-side assumptions -- continued globalisation scenario

	Trend growth		Trend productivity		Nairu		Trend labour force		Trend participation rate		Working-age population	
	Growth rate per annum				Per cent		Growth rate per annum					
	2001-05	2020-25	2001-05	2020-25	2001-05	2020-25	2001-05	2020-25	2001-05	2020-25	2001-05	2020-25
OECD												
United States	3.2	2.6	2.2	1.8	4.8	4.8	1.0	0.8	66.3	65.5	1.2	0.8
Japan	1.6	1.3	1.6	1.8	3.9	3.7	0	-0.5	78.5	80.0	-0.4	-0.5
Euro Area	1.8	1.5	0.8	1.8	8.0	6.5	1.0	-0.3	71.1	73.8	0.4	-0.3
Other OECD Europe	2.8	2.4	2.2	2.3	7.9	7.0	0.6	0.1	72.2	72.7	0.6	0.1
Other OECD	3.7	2.4	2.4	2.2	5.4	4.4	1.3	0.2	72.6	74.6	1.0	0.2
Non-OECD												
China	8.2	7.0										
Other Non-OECD Asia	5.8	5.6										
Non-OECD Europe	6.5	4.1										
Africa, the Middle East and Latin America	3.5	3.5										

Table 3. **GDP growth -- continued globalisation scenario**

	Average GDP growth rates			Average GDP per capita growth rates			GDP per capita relative to United States at projected PPP exchange rates as percentage		
	2006-25	2006-15	2016-25	2006-25	2006-15	2016-25	2005	2015	2025
United States	2.8	2.9	2.7	2.0	2.0	2.0			
Japan	1.5	1.7	1.3	1.6	1.7	1.6	72	70	67
Euro area	1.8	2.1	1.6	1.8	1.9	1.6	68	67	65
Other OECD Europe	2.7	2.9	2.4	2.3	2.4	2.1	46	48	49
Rest of OECD	2.9	3.2	2.5	2.1	2.4	1.9	46	48	47
China	7.5	7.9	7.0	6.9	7.3	6.5	17	28	43
Other Non-OECD Asia	5.9	6.1	5.6	4.7	4.8	4.6	9	11	15
Non-OECD Europe Africa, the Middle East and Latin America	4.8	5.3	4.3	4.9	5.5	4.4	22	31	40
	3.9	4.3	3.6	2.4	2.6	2.1	12	12	12
OECD (2000 PPP US\$)	2.4	2.6	2.2	2.0	2.1	1.9			
Non OECD (2000 PPP US\$)	6.0	6.3	5.7	4.8	5.0	4.6			
World (2000 PPP US\$)	4.3	4.4	4.2	3.3	3.3	3.3			

Table 4. Continued globalisation scenario -- summary

	2006-25	2006-15	2016-25
World	<i>Average annual percentage change</i>		
Gross domestic product, volume at 2000 US\$	2.8	3.1	2.6
Gross domestic product, volume at 2000 PPP US\$	4.3	4.4	4.2
Exports of goods and services, volume	7.0	7.9	6.1
OECD	<i>Average annual percentage change</i>		
Gross domestic product, volume at 2000 US\$	1.8	2.0	1.7
Gross domestic product, volume at 2000 PPP US\$	2.4	2.6	2.2
	<i>Average</i>		
Current account percentage of GDP	-1.7	-1.7	-1.7
Non-OECD	<i>Average annual percentage change</i>		
Gross domestic product, volume at 2000 US\$	5.2	5.6	4.8
Gross domestic product, volume at 2000 PPP US\$	6.0	6.3	5.7
	<i>Average</i>		
Current account percentage of GDP	4.3	5.3	3.2
	<i>Non-OECD</i>		
China	<i>Average annual percentage change</i>		
Gross domestic product, volume	7.5	7.9	7.0
	<i>Average</i>		
Current account percentage of GDP	6.5	8.4	5.8
Net foreign assets percentage of GDP ¹		47.4	38.6
Other Non-OECD Asia	<i>Average annual percentage change</i>		
Gross domestic product, volume	5.9	6.1	5.6
	<i>Average</i>		
Current account percentage of GDP	1.4	1.9	1.1
Net foreign assets percentage of GDP ¹		6.8	-12.0
Non-OECD Europe	<i>Average annual percentage change</i>		
Gross domestic product, volume	4.8	5.3	4.3
	<i>Average</i>		
Current account percentage of GDP	1.5	2.5	1.1
Net foreign assets percentage of GDP ¹		1.3	-5.8
Africa, the Middle East and Latin America	<i>Average annual percentage change</i>		
Gross domestic product, volume	3.9	4.3	3.6
	<i>Average</i>		
Current account percentage of GDP	3.7	5.7	2.7
Net foreign assets percentage of GDP ¹		27.1	11.8

1. The ratios "Net foreign assets percentage of GDP" and "Government debt percentage of GDP" are represented for the end of period of, respectively, year 2015 and 2025.

Table 4. Continued globalisation scenario -- summary (*cont'd*)

	2006-25	2006-15	2016-25
<i>OECD</i>			
United States	<i>average annual percentage change</i>		
Gross domestic product, volume	2.8	2.9	2.7
Private final consumption expenditure, volume	2.6	2.7	2.5
Gross total fixed capital formation, volume	2.7	2.8	2.7
Total employment	1.0	1.0	0.9
Private final consumption expenditure, deflator	2.1	2.2	2.0
Compensation of employees, value	5.2	5.5	4.8
	<i>Average</i>		
Nominal short-term interest rate	5.1	5.2	5.0
Current account percentage of GDP	-5.3	-6.0	-4.9
Government net lending percentage of GDP	-2.1	-2.3	-2.0
Government debt percentage of GDP ¹		57.2	52.3
Net foreign assets percentage of GDP ¹		-53.5	-66.1
Japan	<i>Average annual percentage change</i>		
Gross domestic product, volume	1.5	1.7	1.3
Private final consumption expenditure, volume	1.3	1.3	1.3
Gross total fixed capital formation, volume	1.5	1.7	1.3
Total employment	-0.5	-0.5	-0.6
Private final consumption expenditure, deflator	1.9	1.6	2.1
Compensation of employees, value	3.0	2.7	3.4
	<i>Average</i>		
Nominal short-term interest rate	2.8	2.2	3.5
Current account percentage of GDP	2.5	3.9	1.5
Government net lending percentage of GDP	-3.2	-3.4	-3.0
Government debt percentage of GDP ¹		151.5	135.0
Net foreign assets percentage of GDP ¹		56.4	54.1
Euro area	<i>Average annual percentage change</i>		
Gross domestic product, volume	1.8	2.1	1.6
Private final consumption expenditure, volume	1.8	1.9	1.6
Gross total fixed capital formation, volume	2.0	2.5	1.5
Total employment	0.2	0.5	-0.2
Private final consumption expenditure, deflator	2.0	2.0	2.1
Compensation of employees, value	3.7	3.8	3.7
	<i>Average</i>		
Nominal short-term interest rate	3.7	3.7	3.8
Current account percentage of GDP	-0.5	0.0	-0.8
Government net lending percentage of GDP	-1.4	-1.5	-1.4
Government debt percentage of GDP ¹		66.2	58.4
Net foreign assets percentage of GDP ¹		-7.2	-7.9

1. The ratios "Net foreign assets percentage of GDP" and "Government debt percentage of GDP" are represented for the end of period of, respectively, year 2015 and 2025.

Table 4. Continued globalisation scenario -- summary (*cont'd*)

	2006-25	2006-15	2016-25
Other OECD Europe	<i>Average annual percentage change</i>		
Gross domestic product, volume	2.7	2.9	2.4
Private final consumption expenditure, volume	2.6	2.7	2.4
Gross total fixed capital formation, volume	3.5	4.2	2.8
Total employment	0.3	0.6	0.1
Private final consumption expenditure, deflator	2.1	2.1	2.0
Compensation of employees, value	4.6	4.7	4.5
	<i>Average</i>		
Nominal short-term interest rate	4.5	4.5	4.5
Current account percentage of GDP	2.2	2.0	2.3
Government net lending percentage of GDP	-0.3	-0.3	-0.3
Government debt percentage of GDP ¹		30.7	22.2
Net foreign assets percentage of GDP ¹		17.1	46.2
Other OECD	<i>Average annual percentage change</i>		
Gross domestic product, volume	2.9	3.2	2.5
Private final consumption expenditure, volume	3.1	3.4	2.7
Gross total fixed capital formation, volume	2.9	3.3	2.5
Total employment	0.6	0.9	0.3
Private final consumption expenditure, deflator	2.1	2.1	2.0
Compensation of employees, value	4.9	5.2	4.6
	<i>Average</i>		
Nominal short-term interest rate	4.6	4.6	4.5
Current account percentage of GDP	-0.7	-1.4	-0.3
Government net lending percentage of GDP	0.1	0.5	-0.1
Government debt percentage of GDP ¹		14.6	10.2
Net foreign assets percentage of GDP ¹		-34.3	-22.2

1. The ratios "Net foreign assets percentage of GDP" and "Government debt percentage of GDP" are represented for the end of period of, respectively, year 2015 and 2025¹.

Table 5. OECD and non-OECD's share in world assets and liabilities, continued globalisation scenario

Percentage points

	<i>Assets</i>			
	2004		2025	
	OECD	Non-OECD	OECD	Non-OECD
Foreign Direct Investment	91	9	72	28
Foreign Equity Investment	91	9	81	19
Other Foreign Investment	82	18	54	46
Total Foreign Investment	86	14	63	37
	<i>Liabilities</i>			
	2004		2025	
	OECD	Non-OECD	OECD	Non-OECD
Foreign Direct Investment	78	22	47	53
Foreign Equity Investment	92	8	72	28
Other Foreign Investment	90	10	72	28
Total Foreign Investment	87	13	67	33

Table 6. Supply side assumptions -- moderated globalisation scenario

	Trend growth		Trend productivity		Nairu		Trend labour force		Trend participation rate		Working-age population	
	Growth rate per annum				Per cent		Growth rate per annum					
	2001-05	2020-25	2001-05	2020-25	2001-05	2020-25	2001-05	2020-25	2001-05	2020-25	2001-05	2020-25
OECD												
United States	3.2	2.4	2.2	1.6	4.8	5.3	1.0	0.8	66.3	65.5	1.2	0.8
Japan	1.6	1.1	1.6	1.6	3.9	4.1	0	-0.5	78.5	80.0	-0.4	-0.5
Euro Area	1.8	1.3	0.8	1.6	8.0	7.0	1.0	-0.3	71.1	73.8	0.4	-0.3
Other OECD Europe	2.8	2.2	2.2	2.1	7.9	7.4	0.6	0.1	72.2	72.7	0.6	0.1
Other OECD	3.7	2.2	2.4	2.0	5.4	4.9	1.3	0.2	72.6	74.6	1.0	0.2
Non OECD												
China	8.2	6.5										
Other Non-OECD Asia	5.8	5.1										
Non-OECD Europe	6.5	3.6										
Africa, the Middle East and Latin America	3.5	3.0										

Table 7. GDP growth -- moderated globalisation scenario

	Average GDP growth rates			Average GDP per capita growth rates			GDP per capita relative to United States at projected PPP exchange rates as percentage		
	2006-25	2006-15	2016-25	2006-25	2006-15	2016-25	2005	2015	2025
United States	2.5	2.6	2.4	1.7	1.7	1.7			
Japan	1.4	1.6	1.1	1.5	1.6	1.4	72	72	70
Euro area	1.6	1.9	1.4	1.6	1.7	1.4	68	68	66
Other OECD Europe	2.5	2.7	2.3	2.1	2.2	1.9	46	49	50
Other OECD	2.6	3.0	2.3	1.9	2.1	1.6	46	48	48
China	7.0	7.5	6.4	6.4	6.8	5.9	17	28	42
Other non-OECD Asia	5.4	5.6	5.1	4.2	4.3	4.0	9	11	14
Non-OECD Europe Africa, the Middle East and Latin America	4.3	4.8	3.7	4.4	5.0	3.9	22	31	38
	3.4	3.9	3.0	1.9	2.2	1.6	12	12	12
OECD (2000 PPP US\$)	2.2	2.4	2.0	1.7	1.8	1.6			
Non OECD (2000 PPP US\$)	5.5	5.8	5.1	4.3	4.5	4.1			
World (2000 PPP US\$)	3.9	4.0	3.7	2.9	3.0	2.9			

Table 8. **Moderated globalisation scenario -- summary**

	Year	2006-25	2006-15	2016-25
World		<i>Average annual percentage change</i>		
	Gross domestic product, volume at 2000 US\$	2.6	2.8	2.3
	Gross domestic product, volume at 2000 PPP US\$	3.9	4.0	3.7
	Exports of goods and services, volume	5.2	6.3	4.0
OECD		<i>Average annual percentage change</i>		
	Gross domestic product, volume at 2000 US\$	1.7	1.8	1.5
	Gross domestic product, volume at 2000 PPP US\$	2.2	2.4	2.0
		<i>Average</i>		
	Current account percentage of GDP	-2.0	-1.9	-2.0
Non-OECD		<i>Average annual percentage change</i>		
	Gross domestic product, volume at 2000 US\$	4.7	5.1	4.3
	Gross domestic product, volume at 2000 PPP US\$	5.5	5.8	5.1
		<i>Average</i>		
	Current account percentage of GDP	4.1	5.1	3.1
	<i>Non-OECD</i>			
China		<i>Average annual percentage change</i>		
	Gross domestic product, volume	7.0	7.5	6.4
		<i>Average</i>		
	Current account percentage of GDP	6.9	7.6	6.6
	Net foreign assets percentage of GDP ¹		47.2	50.6
Other Non-OECD Asia		<i>Average annual percentage change</i>		
	Gross domestic product, volume	5.4	5.6	5.1
		<i>Average</i>		
	Current account percentage of GDP	-1.4	1.7	-1.8
	Net foreign assets percentage of GDP ¹		7.9	-35.8
Non-OECD Europe		<i>Average annual percentage change</i>		
	Gross domestic product, volume	4.3	4.8	3.7
		<i>Average</i>		
	Current account percentage of GDP	-0.3	0.1	-1.2
	Net foreign assets percentage of GDP ¹		-1.2	-16.4
Africa, the Middle East and Latin America		<i>Average annual percentage change</i>		
	Gross domestic product, volume	3.4	3.9	3.0
		<i>Average</i>		
	Current account percentage of GDP	5.1	5.4	4.3
	Net foreign assets percentage of GDP ¹		40.8	45.6

1. The ratios "Net foreign assets percentage of GDP" and "Government debt percentage of GDP" are represented for the end of period of, respectively, year 2015 and 2025.

Table 8. **Moderated globalisation scenario -- summary** (cont'd)

Year	2006-25	2006-15	2016-25
<i>OECD</i>			
United States	<i>Average annual percentage change</i>		
Gross domestic product, volume	2.5	2.6	2.4
Private final consumption expenditure, volume	2.4	2.5	2.3
Gross total fixed capital formation, volume	2.3	2.3	2.3
Total employment	0.8	0.9	0.8
Private final consumption expenditure, deflator	2.0	2.0	2.0
Compensation of employees, value	4.7	5.1	4.4
		<i>Average</i>	
Nominal short-term interest rate	5.3	5.2	5.3
Current account percentage of GDP	-6.0	-6.3	-5.8
Government net lending percentage of GDP	-2.4	-2.6	-2.3
Government debt percentage of GDP ¹		61.7	59.3
Net foreign assets percentage of GDP ¹		-57.8	-79.8
Japan	<i>Average annual percentage change</i>		
Gross domestic product, volume	1.4	1.6	1.1
Private final consumption expenditure, volume	1.2	1.3	1.2
Gross total fixed capital formation, volume	1.4	1.8	1.1
Total employment	-0.6	-0.6	-0.6
Private final consumption expenditure, deflator	2.0	1.9	2.1
Compensation of employees, value	3.1	2.9	3.2
		<i>Average</i>	
Nominal short-term interest rate	2.8	2.2	3.5
Current account percentage of GDP	2.9	3.8	2.1
Government net lending percentage of GDP	-3.4	-3.6	-3.2
Government debt percentage of GDP ¹		150.2	138.2
Net foreign assets percentage of GDP ¹		48.3	54.1
Euro area	<i>Average annual percentage change</i>		
Gross domestic product, volume	1.6	1.9	1.4
Private final consumption expenditure, volume	1.6	1.7	1.4
Gross total fixed capital formation, volume	1.9	2.3	1.5
Total employment	0.1	0.5	-0.2
Private final consumption expenditure, deflator	2.0	2.0	2.0
Compensation of employees, value	3.5	3.6	3.5
		<i>Average</i>	
Nominal short-term interest rate	3.7	3.7	3.8
Current account percentage of GDP	-0.3	-0.2	-0.4
Government net lending percentage of GDP	-1.5	-1.6	-1.5
Government debt percentage of GDP ¹		68.7	61.8
Net foreign assets percentage of GDP ¹		-10.1	-7.1

1. The ratios "Net foreign assets percentage of GDP" and "Government debt percentage of GDP" are represented for the end of period of, respectively, year 2015 and 2025.

Table 8. **Moderated globalisation scenario -- summary** (*cont'd*)

Year	2006-25	2006-15	2016-25
Other OECD Europe	<i>Average annual percentage change</i>		
Gross domestic product, volume	2.5	2.7	2.3
Private final consumption expenditure, volume	2.3	2.5	2.1
Gross total fixed capital formation, volume	3.3	4.0	2.6
Total employment	0.3	0.5	0.1
Private final consumption expenditure, deflator	2.1	2.1	2.0
Compensation of employees, value	4.4	4.4	4.3
		<i>Average</i>	
Nominal short-term interest rate	4.5	4.5	4.5
Current account percentage of GDP	1.4	1.7	1.3
Government net lending percentage of GDP	-0.4	-0.5	-0.4
Government debt percentage of GDP ¹		32.5	24.2
Net foreign assets percentage of GDP ¹		11.4	29.9
Other OECD	<i>Average annual percentage change</i>		
Gross domestic product, volume	2.6	3.0	2.3
Private final consumption expenditure, volume	2.7	3.2	2.3
Gross total fixed capital formation, volume	2.7	3.1	2.3
Total employment	0.6	0.8	0.3
Private final consumption expenditure, deflator	2.1	2.2	2.0
Compensation of employees, value	4.7	5.1	4.4
		<i>Average</i>	
Nominal short-term interest rate	4.6	4.6	4.5
Current account percentage of GDP	-1.0	-1.5	-0.7
Government net lending percentage of GDP	0.0	0.4	-0.2
Government debt percentage of GDP ¹		16.3	11.9
Net foreign assets percentage of GDP ¹		-36.2	-32.8

1. The ratios "Net foreign assets percentage of GDP" and "Government debt percentage of GDP" are represented for the end of period of, respectively, year 2015 and 2025.

Table 9. Per capita incomes in the alternative globalisation scenarios

Current PPP US\$

	OECD	Non-OECD	World
	Continued globalisation		
2005	28 440	5 085	9 345
2025	63 587	20 003	28 852
	Moderated globalisation		
2005	28 440	5 085	9 345
2025	59 264	17 779	24 627

Table 10. Simulation results: increase in non-OECD domestic demand from 2005

Year	1	2	3	4	5	10
<i>Percentage points deviation from baseline</i>						
World						
Gross domestic product, volume	0.3	0.3	0.3	0.3	0.3	0.1
Imports of goods and services, volume	0.7	0.7	0.5	0.4	0.3	0.2
Exports of goods and services, volume	0.7	0.7	0.5	0.4	0.3	0.2
OECD						
Gross domestic product, volume	0.1	0.2	0.2	0.2	0.2	0.1
Imports of goods and services, volume	0.5	0.6	0.4	0.3	0.3	0.1
Exports of goods and services, volume	0.6	0.7	0.6	0.5	0.4	0.2
Non-OECD						
Gross domestic product, volume	0.9	0.8	0.6	0.5	0.4	0.2
Imports of goods and services, volume	1.3	1.0	0.8	0.6	0.5	0.3
Exports of goods and services, volume	0.9	0.7	0.5	0.4	0.2	0.1
<i>Non-OECD</i>						
China						
Gross domestic product, volume	0.8	0.7	0.6	0.5	0.3	-0.2
Total domestic expenditure, volume	1.1	1.0	1.0	1.1	1.0	0.4
Imports of goods and services, volume	1.7	1.0	1.0	1.0	0.9	0.3
Exports of goods and services, volume	0.7	0.5	0.1	-0.2	-0.5	-0.6
Consumer price inflation	0.2	0.4	0.5	0.5	0.4	0.0
Nominal short-term interest rate	0.7	1.0	1.0	0.9	0.7	-0.2
Other Non-OECD Asia						
Gross domestic product, volume	0.9	1.0	0.7	0.5	0.4	0.1
Total domestic expenditure, volume	0.9	1.1	0.8	0.5	0.3	0.0
Imports of goods and services, volume	0.9	1.0	0.7	0.5	0.4	0.1
Exports of goods and services, volume	1.0	0.8	0.6	0.5	0.5	0.2
Non-OECD Europe						
Gross domestic product, volume	0.9	0.7	0.6	0.6	0.5	0.4
Total domestic expenditure, volume	1.1	0.9	0.6	0.5	0.4	0.3
Imports of goods and services, volume	2.1	1.0	0.6	0.5	0.3	0.4
Exports of goods and services, volume	1.7	0.8	0.5	0.6	0.5	0.6
Africa, the Middle East and Latin America						
Gross domestic product, volume	0.9	0.8	0.6	0.5	0.4	0.3
Total domestic expenditure, volume	1.1	0.8	0.6	0.5	0.3	0.3
Imports of goods and services, volume	1.2	1.0	0.7	0.5	0.4	0.5
Exports of goods and services, volume	0.5	0.8	0.7	0.6	0.6	0.7

Table 10. Simulation results: increase in non-OECD domestic demand from 2005 (*cont'd*)

Year	1	2	3	4	5	10
<i>OECD</i>						
	<i>Percentage points deviation from baseline</i>					
United States						
Gross domestic product, volume	0.1	0.2	0.2	0.2	0.2	0.0
Total domestic expenditure, volume	0.1	0.1	0.2	0.2	0.2	-0.1
Imports of goods and services, volume	0.3	0.3	0.3	0.2	0.2	-0.1
Exports of goods and services, volume	0.7	0.8	0.6	0.5	0.4	0.1
Consumer price inflation	0.0	0.0	0.1	0.2	0.2	0.2
Nominal short-term interest rate	0.2	0.3	0.5	0.6	0.5	0.3
Japan						
Gross domestic product, volume	0.1	0.2	0.2	0.2	0.2	0.1
Total domestic expenditure, volume	0.0	0.1	0.1	0.1	0.1	0.1
Imports of goods and services, volume	0.4	0.3	0.2	0.2	0.2	0.0
Exports of goods and services, volume	0.9	0.9	0.7	0.6	0.5	0.5
Consumer price inflation	0.1	0.0	0.1	0.1	0.1	0.1
Nominal short-term interest rate	0.2	0.2	0.3	0.4	0.3	0.3
Euro area						
Gross domestic product, volume	0.1	0.2	0.2	0.2	0.2	0.0
Total domestic expenditure, volume	0.1	0.2	0.2	0.1	0.1	-0.1
Imports of goods and services, volume	0.5	0.7	0.5	0.3	0.2	0.0
Exports of goods and services, volume	0.5	0.7	0.6	0.5	0.4	0.3
Consumer price inflation	0.0	0.1	0.1	0.1	0.1	0.1
Nominal short-term interest rate	0.2	0.3	0.4	0.4	0.4	0.3
Other OECD Europe						
Gross domestic product, volume	0.3	0.4	0.4	0.5	0.5	0.3
Total domestic expenditure, volume	0.4	0.5	0.5	0.6	0.7	0.6
Imports of goods and services, volume	0.9	0.8	0.6	0.6	0.7	0.6
Exports of goods and services, volume	0.5	0.6	0.4	0.4	0.3	0.1
Consumer price inflation	0.1	0.1	0.2	0.2	0.2	0.3
Nominal short-term interest rate	0.5	0.7	0.9	0.9	1.0	1.0
Other OECD						
Gross domestic product, volume	0.1	0.2	0.2	0.2	0.2	0.1
Total domestic expenditure, volume	0.1	0.1	0.2	0.2	0.2	0.1
Imports of goods and services, volume	0.5	0.5	0.4	0.3	0.3	0.1
Exports of goods and services, volume	0.6	0.6	0.4	0.4	0.3	0.0
Consumer price inflation	0.1	0.1	0.2	0.2	0.2	0.2
Nominal short-term interest rate	0.3	0.4	0.6	0.7	0.7	0.5

Table 11. **Simulation results: increase in non-OECD domestic demand from 2015**

Year	1	2	3	4	5	10
	<i>Percentage points deviation from baseline</i>					
World						
Gross domestic product, volume	0.4	0.4	0.4	0.4	0.4	0.1
Imports of goods and services, volume	1.2	1.0	0.8	0.6	0.4	0.2
Exports of goods and services, volume	1.1	1.0	0.8	0.6	0.4	0.2
OECD						
Gross domestic product, volume	0.2	0.4	0.4	0.4	0.4	0.0
Imports of goods and services, volume	0.9	1.0	0.7	0.5	0.4	0.1
Exports of goods and services, volume	1.0	1.0	0.8	0.6	0.5	0.2
Non-OECD						
Gross domestic product, volume	0.9	0.8	0.6	0.5	0.3	0.2
Imports of goods and services, volume	1.6	1.1	0.8	0.6	0.5	0.3
Exports of goods and services, volume	1.3	1.0	0.7	0.5	0.3	0.2
<i>Non-OECD</i>						
China						
Gross domestic product, volume	0.7	0.7	0.5	0.3	0.2	0.0
Total domestic expenditure, volume	1.1	0.9	0.9	0.9	0.8	0.3
Imports of goods and services, volume	1.9	1.0	1.0	0.8	0.6	0.2
Exports of goods and services, volume	1.1	0.8	0.4	0.0	-0.2	-0.2
Consumer price inflation	0.2	0.4	0.5	0.4	0.3	0.1
Nominal short-term interest rate	0.6	0.9	1.0	0.8	0.6	0.1
Other Non-OECD Asia						
Gross domestic product, volume	1.2	1.0	0.8	0.5	0.4	0.1
Total domestic expenditure, volume	0.8	1.0	0.7	0.4	0.2	0.1
Imports of goods and services, volume	1.1	1.0	0.8	0.5	0.3	0.1
Exports of goods and services, volume	1.5	1.0	0.8	0.6	0.4	0.1
Non-OECD Europe						
Gross domestic product, volume	0.8	0.7	0.7	0.6	0.5	0.4
Total domestic expenditure, volume	1.2	0.9	0.7	0.5	0.3	0.1
Imports of goods and services, volume	2.8	1.1	0.7	0.6	0.3	0.4
Exports of goods and services, volume	2.6	1.0	0.7	0.7	0.5	0.7
Africa, the Middle East and Latin America						
Gross domestic product, volume	0.9	0.8	0.6	0.5	0.4	0.3
Total domestic expenditure, volume	1.1	0.8	0.6	0.4	0.2	0.2
Imports of goods and services, volume	1.4	1.2	0.8	0.6	0.5	0.6
Exports of goods and services, volume	0.8	1.2	1.0	0.8	0.8	0.8

Table 11. **Simulation results: increase in non-OECD domestic demand from 2015** (*cont'd*)

Year	1	2	3	4	5	10
<i>OECD</i>						
<i>Percentage points deviation from baseline</i>						
United States						
Gross domestic product, volume	0.2	0.4	0.4	0.4	0.3	-0.1
Total domestic expenditure, volume	0.1	0.3	0.3	0.3	0.3	-0.1
Imports of goods and services, volume	0.5	0.6	0.5	0.3	0.3	-0.1
Exports of goods and services, volume	1.2	1.1	0.9	0.7	0.5	0.0
Consumer price inflation	0.0	0.1	0.3	0.4	0.3	0.3
Nominal short-term interest rate	0.4	0.6	0.9	1.0	0.9	0.3
Japan						
Gross domestic product, volume	0.3	0.3	0.3	0.3	0.3	0.2
Total domestic expenditure, volume	0.1	0.1	0.2	0.3	0.2	0.1
Imports of goods and services, volume	0.6	0.5	0.4	0.3	0.2	0.1
Exports of goods and services, volume	1.4	1.2	0.9	0.7	0.5	0.5
Consumer price inflation	0.1	0.0	0.2	0.2	0.1	0.2
Nominal short-term interest rate	0.3	0.4	0.5	0.6	0.5	0.5
Euro area						
Gross domestic product, volume	0.2	0.3	0.4	0.4	0.4	0.1
Total domestic expenditure, volume	0.2	0.3	0.3	0.3	0.2	-0.3
Imports of goods and services, volume	0.9	1.1	0.8	0.5	0.3	-0.1
Exports of goods and services, volume	0.9	1.1	0.9	0.7	0.5	0.3
Consumer price inflation	0.1	0.1	0.2	0.2	0.2	0.2
Nominal short-term interest rate	0.4	0.6	0.8	0.8	0.7	0.5
Other OECD Europe						
Gross domestic product, volume	0.3	0.6	0.7	0.7	0.7	0.3
Total domestic expenditure, volume	0.8	0.9	0.9	0.9	1.0	0.9
Imports of goods and services, volume	1.7	1.5	1.0	0.8	0.8	0.9
Exports of goods and services, volume	0.9	0.9	0.7	0.6	0.4	0.1
Consumer price inflation	0.1	0.1	0.3	0.3	0.3	0.3
Nominal short-term interest rate	0.6	1.0	1.4	1.4	1.4	1.2
Other OECD						
Gross domestic product, volume	0.2	0.3	0.4	0.4	0.3	0.0
Total domestic expenditure, volume	0.1	0.3	0.4	0.5	0.5	0.1
Imports of goods and services, volume	0.8	0.8	0.8	0.6	0.5	0.0
Exports of goods and services, volume	1.0	0.8	0.7	0.5	0.3	-0.1
Consumer price inflation	0.1	0.2	0.4	0.4	0.4	0.2
Nominal short-term interest rate	0.5	0.8	1.0	1.1	1.1	0.5

Table 12. **Simulation results: financial shock in non-OECD 2005**

Year	1	2	3	4	5	10
	<i>Percentage points deviation from baseline</i>					
World						
Gross domestic product, volume	-0.5	-0.6	-0.7	-0.7	-0.6	-0.2
Imports of goods and services, volume	-1.3	-1.2	-0.9	-0.7	-0.5	-0.2
Exports of goods and services, volume	-1.2	-1.1	-0.8	-0.6	-0.4	-0.1
OECD						
Gross domestic product, volume	-0.3	-0.5	-0.6	-0.6	-0.5	0.0
Imports of goods and services, volume	-0.9	-1.0	-0.7	-0.4	-0.2	0.3
Exports of goods and services, volume	-1.5	-1.7	-1.6	-1.4	-1.2	-0.7
Non-OECD						
Gross domestic product, volume	-1.4	-1.3	-1.1	-1.1	-1.1	-1.1
Imports of goods and services, volume	-2.2	-1.6	-1.2	-1.1	-0.9	-0.8
Exports of goods and services, volume	-0.7	0.0	0.6	0.7	0.9	0.8
<i>Non-OECD</i>						
China						
Gross domestic product, volume	-0.4	-0.2	0.0	0.2	0.3	0.2
Total domestic expenditure, volume	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Imports of goods and services, volume	-3.0	-2.5	-2.1	-2.1	-1.9	-1.7
Exports of goods and services, volume	1.4	1.7	2.2	2.3	2.4	1.6
Consumer price inflation	2.7	1.1	-0.4	-0.3	-0.1	0.0
Nominal short-term interest rate	2.0	2.0	2.0	2.0	2.0	2.0
Other Non-OECD Asia						
Gross domestic product, volume	-2.1	-1.9	-1.7	-1.7	-1.6	-1.4
Total domestic expenditure, volume	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Imports of goods and services, volume	-2.0	-1.9	-1.8	-1.7	-1.6	-1.4
Exports of goods and services, volume	-2.1	-1.8	-1.4	-1.3	-1.1	-0.9
Non-OECD Europe						
Gross domestic product, volume	-1.4	-1.0	-1.1	-1.1	-1.0	-0.9
Total domestic expenditure, volume	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Imports of goods and services, volume	-2.6	-0.3	-0.5	-0.4	-0.3	-0.5
Exports of goods and services, volume	-1.4	1.6	1.3	1.4	1.5	1.2
Africa, the Middle East and Latin America						
Gross domestic product, volume	-1.5	-1.5	-1.4	-1.4	-1.5	-1.6
Total domestic expenditure, volume	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Imports of goods and services, volume	-1.6	-1.0	-0.1	0.2	0.4	0.7
Exports of goods and services, volume	0.0	0.5	1.9	2.1	2.1	2.0

Table 12. **Simulation results: financial shock in non-OECD 2005** (*cont'd*)

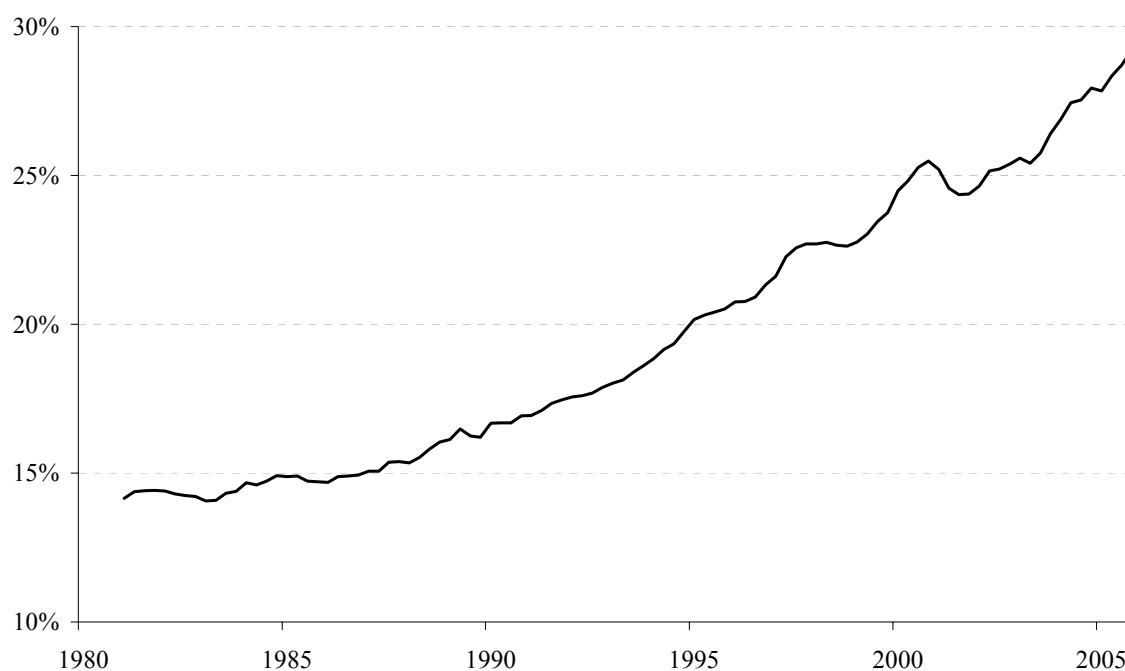
Year	1	2	3	4	5	10
<i>OECD</i>	<i>Percentage points deviation from baseline</i>					
United States						
Gross domestic product, volume	-0.2	-0.5	-0.6	-0.6	-0.6	0.2
Total domestic expenditure, volume	-0.1	-0.4	-0.5	-0.5	-0.4	0.4
Imports of goods and services, volume	-0.7	-0.8	-0.7	-0.5	-0.3	0.5
Exports of goods and services, volume	-1.9	-2.3	-2.1	-1.9	-1.6	-0.6
Consumer price inflation	-0.1	-0.1	-0.4	-0.6	-0.6	-0.5
Nominal short-term interest rate	-0.5	-0.9	-1.4	-1.7	-1.6	-0.5
Japan						
Gross domestic product, volume	-0.3	-0.4	-0.6	-0.6	-0.6	-0.3
Total domestic expenditure, volume	-0.1	-0.2	-0.3	-0.3	-0.3	0.2
Imports of goods and services, volume	-0.9	-0.9	-0.7	-0.6	-0.5	0.2
Exports of goods and services, volume	-2.3	-2.7	-2.6	-2.6	-2.5	-2.4
Consumer price inflation	-0.2	-0.1	-0.3	-0.4	-0.4	-0.5
Nominal short-term interest rate	-0.7	-0.8	-1.3	-1.4	-1.3	-1.3
Euro area						
Gross domestic product, volume	-0.2	-0.4	-0.5	-0.5	-0.4	0.0
Total domestic expenditure, volume	-0.2	-0.4	-0.3	-0.2	-0.1	0.5
Imports of goods and services, volume	-1.1	-1.3	-0.9	-0.4	0.0	0.4
Exports of goods and services, volume	-1.1	-1.4	-1.2	-0.9	-0.7	-0.5
Consumer price inflation	-0.1	-0.2	-0.3	-0.3	-0.3	-0.2
Nominal short-term interest rate	-0.5	-0.8	-1.0	-1.0	-0.9	-0.7
Other OECD Europe						
Gross domestic product, volume	-0.4	-0.5	-0.5	-0.5	-0.5	-0.1
Total domestic expenditure, volume	-0.3	-0.2	-0.1	-0.1	-0.1	0.2
Imports of goods and services, volume	-1.1	-0.6	-0.1	-0.1	0.0	0.0
Exports of goods and services, volume	-1.3	-1.3	-1.1	-1.0	-0.8	-0.5
Consumer price inflation	-0.1	-0.3	-0.3	-0.3	-0.3	-0.3
Nominal short-term interest rate	-0.7	-1.2	-1.2	-1.1	-1.2	-1.0
Other OECD						
Gross domestic product, volume	-0.3	-0.5	-0.6	-0.6	-0.6	-0.2
Total domestic expenditure, volume	-0.1	-0.2	-0.3	-0.3	-0.3	-0.1
Imports of goods and services, volume	-1.1	-1.3	-1.1	-0.9	-0.7	-0.2
Exports of goods and services, volume	-1.7	-1.9	-1.8	-1.6	-1.4	-0.4
Consumer price inflation	-0.3	-0.3	-0.6	-0.7	-0.7	-0.6
Nominal short-term interest rate	-0.9	-1.1	-1.6	-1.8	-1.9	-1.6

Table 13. **Simulation results: financial shock in non-OECD 2015**

Year	1	2	3	4	5	10
	<i>Percentage points deviation from baseline</i>					
World						
Gross domestic product, volume	-0.6	-0.8	-0.9	-0.9	-0.8	-0.2
Imports of goods and services, volume	-1.8	-1.5	-1.1	-0.9	-0.8	-0.1
Exports of goods and services, volume	-1.6	-1.4	-1.0	-0.8	-0.7	0.0
OECD						
Gross domestic product, volume	-0.5	-0.7	-0.9	-0.8	-0.8	0.1
Imports of goods and services, volume	-1.3	-1.3	-0.9	-0.6	-0.4	0.5
Exports of goods and services, volume	-2.0	-2.2	-1.8	-1.7	-1.4	-0.5
Non-OECD						
Gross domestic product, volume	-1.2	-1.2	-1.0	-1.1	-1.1	-1.2
Imports of goods and services, volume	-2.6	-1.9	-1.4	-1.3	-1.1	-0.8
Exports of goods and services, volume	-1.2	-0.5	0.1	0.2	0.3	0.5
	<i>Non-OECD</i>					
China						
Gross domestic product, volume	0.6	0.4	0.3	0.3	0.2	-0.1
Total domestic expenditure, volume	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Imports of goods and services, volume	-3.3	-2.5	-2.1	-2.0	-1.8	-1.3
Exports of goods and services, volume	0.7	0.9	1.1	1.1	1.1	0.8
Consumer price inflation	2.9	1.5	-0.1	-0.1	-0.1	-0.2
Nominal short term interest rate	2.0	2.0	2.0	2.0	2.0	2.0
Other Non-OECD Asia						
Gross domestic product, volume	-2.5	-2.2	-1.9	-1.8	-1.7	-1.4
Total domestic expenditure, volume	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Imports of goods and services, volume	-2.4	-2.2	-2.0	-1.9	-1.8	-1.4
Exports of goods and services, volume	-2.9	-2.4	-1.8	-1.7	-1.5	-0.8
Non-OECD Europe						
Gross domestic product, volume	-1.1	-0.7	-0.8	-0.8	-0.8	-0.8
Total domestic expenditure, volume	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Imports of goods and services, volume	-3.4	-0.3	-0.6	-0.7	-0.5	-0.6
Exports of goods and services, volume	-2.6	1.5	1.1	0.9	1.1	0.9
Africa, the Middle East and Latin America						
Gross domestic product, volume	-1.4	-1.4	-1.3	-1.3	-1.4	-1.7
Total domestic expenditure, volume	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Imports of goods and services, volume	-1.9	-1.5	-0.5	-0.2	0.0	0.4
Exports of goods and services, volume	-0.5	-0.3	1.2	1.5	1.5	1.6

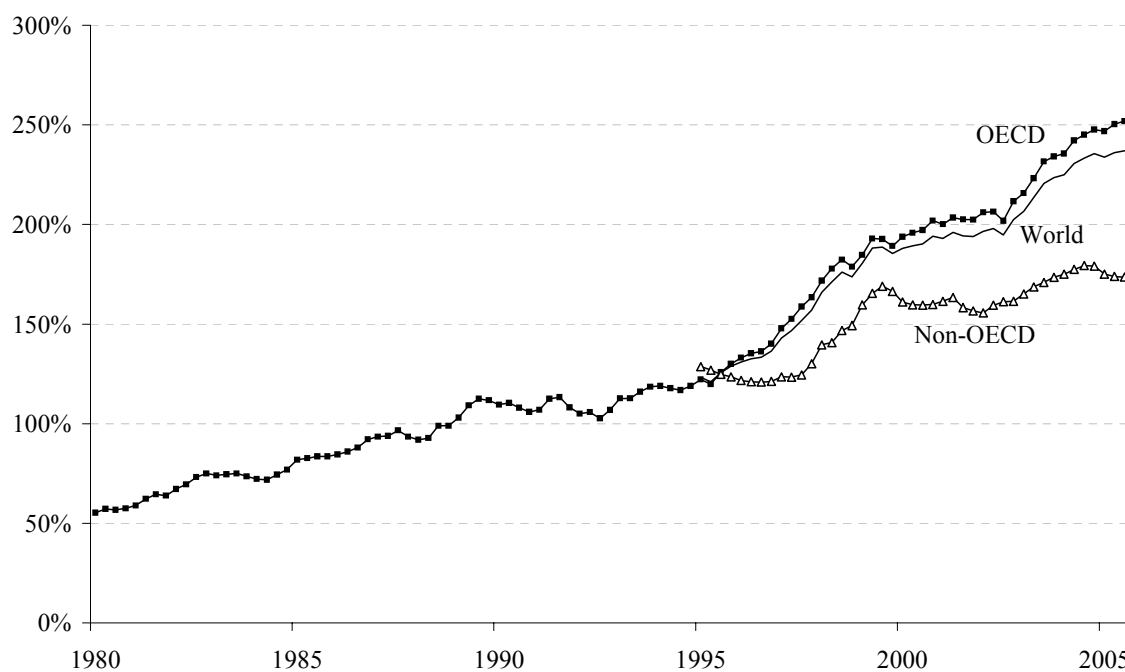
Table 13. **Simulation results: financial shock in non-OECD 2015** (*cont'd*)

Year	1	2	3	4	5	10
<i>OECD</i>	<i>Percentage points deviation from baseline</i>					
United States						
Gross domestic product, volume	-0.5	-0.9	-1.0	-0.9	-0.8	0.4
Total domestic expenditure, volume	-0.2	-0.6	-0.7	-0.6	-0.5	0.6
Imports of goods and services, volume	-0.9	-1.2	-0.9	-0.7	-0.4	0.7
Exports of goods and services, volume	-2.5	-3.0	-2.6	-2.3	-1.9	-0.3
Consumer price inflation	-0.1	-0.2	-0.7	-0.9	-0.8	-0.6
Nominal short-term interest rate	-0.8	-1.5	-2.2	-2.4	-2.2	-0.5
Japan						
Gross domestic product, volume	-0.6	-0.8	-0.9	-1.0	-0.9	-0.3
Total domestic expenditure, volume	-0.2	-0.3	-0.5	-0.5	-0.4	0.3
Imports of goods and services, volume	-1.3	-1.2	-1.0	-0.9	-0.7	0.4
Exports of goods and services, volume	-3.1	-3.4	-3.1	-3.1	-2.9	-2.3
Consumer price inflation	-0.3	-0.1	-0.6	-0.6	-0.5	-0.7
Nominal short-term interest rate	-1.3	-1.2	-2.1	-2.1	-1.9	-1.8
Euro area						
Gross domestic product, volume	-0.3	-0.5	-0.6	-0.7	-0.6	-0.1
Total domestic expenditure, volume	-0.3	-0.5	-0.5	-0.3	-0.2	0.7
Imports of goods and services, volume	-1.4	-1.6	-1.0	-0.6	-0.3	0.6
Exports of goods and services, volume	-1.4	-1.7	-1.3	-1.1	-1.0	-0.4
Consumer price inflation	-0.1	-0.2	-0.4	-0.4	-0.4	-0.3
Nominal short-term interest rate	-0.7	-1.1	-1.4	-1.4	-1.4	-1.0
Other OECD Europe						
Gross domestic product, volume	-0.5	-0.7	-0.8	-0.7	-0.6	0.0
Total domestic expenditure, volume	-0.2	0.0	0.2	0.2	0.1	1.0
Imports of goods and services, volume	-1.3	-0.5	0.1	0.0	-0.2	0.6
Exports of goods and services, volume	-1.7	-1.5	-1.3	-1.2	-1.1	-0.6
Consumer price inflation	-0.2	-0.4	-0.5	-0.4	-0.4	-0.3
Nominal short-term interest rate	-1.0	-1.6	-1.7	-1.5	-1.5	-0.9
Other OECD						
Gross domestic product, volume	-0.6	-0.8	-1.0	-1.0	-1.0	0.0
Total domestic expenditure, volume	-0.2	-0.5	-0.7	-0.8	-0.8	0.0
Imports of goods and services, volume	-1.7	-2.0	-1.7	-1.5	-1.3	0.0
Exports of goods and services, volume	-2.4	-2.5	-2.2	-1.9	-1.6	-0.1
Consumer price inflation	-0.4	-0.5	-0.9	-1.0	-1.1	-0.6
Nominal short-term interest rate	-1.4	-1.8	-2.7	-3.0	-3.0	-1.6

Figure 1. **International trade integration**

Note: Trade integration as measured by the ratio of world exports to world GDP, both in volume terms.

Source: World Trade Organisation.

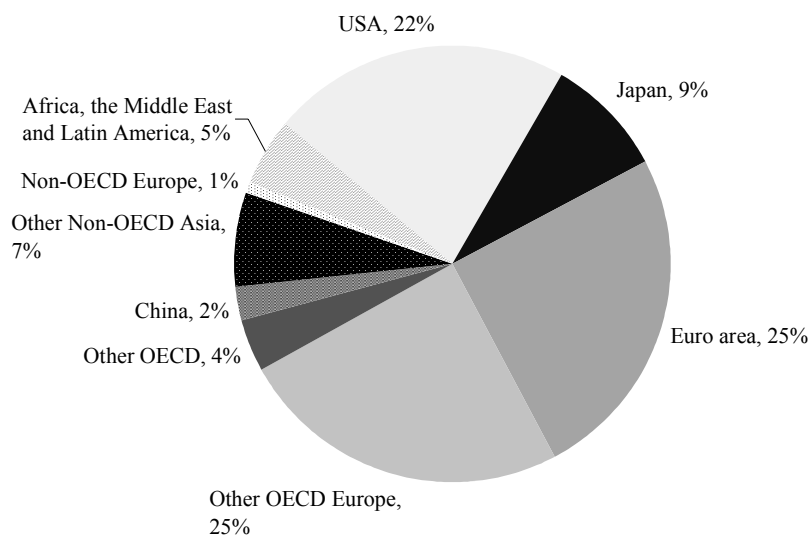
Figure 2. **International financial integration**

Note: Financial integration as measured by the ratio of the stock of foreign assets plus liabilities to GDP.

Source: IMF International Financial Statistics.

Figure 3. **Regional composition of foreign asset holdings in 2005**

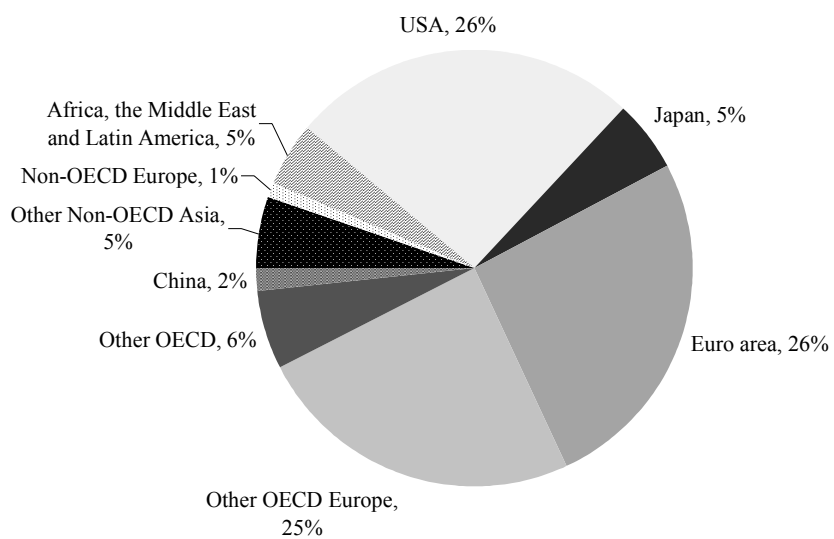
As a percentage of world total



Source: IMF International Financial Statistics.

Figure 4. **Regional composition of foreign liability holdings in 2005**

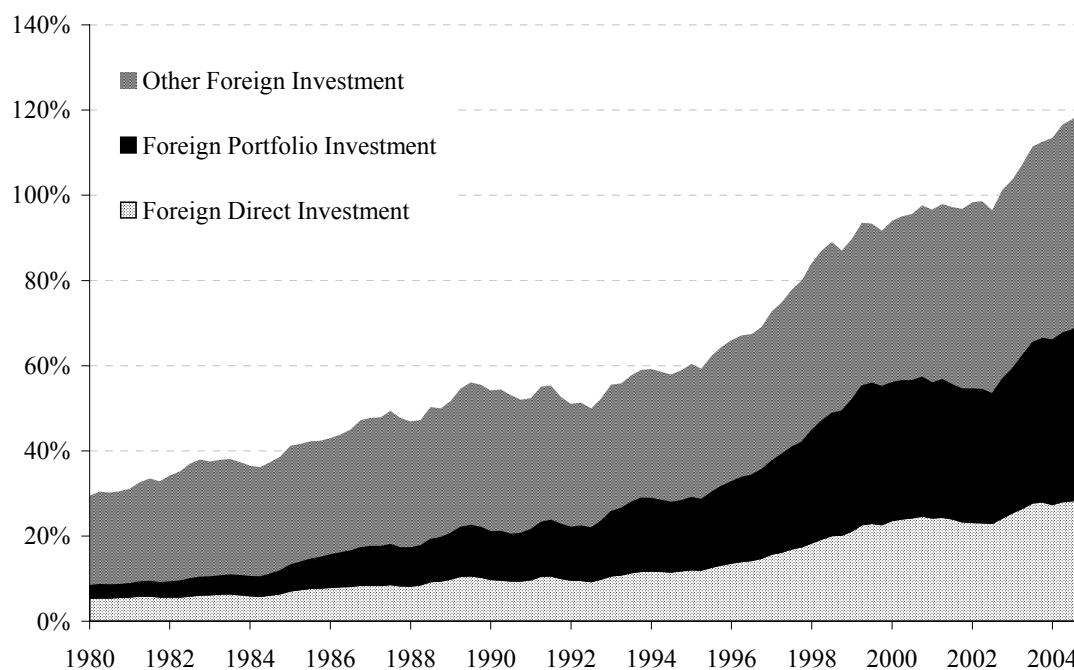
As a percentage of world total



Source: IMF International Financial Statistics.

Figure 5. Evolution of international assets in total and broken into components, OECD

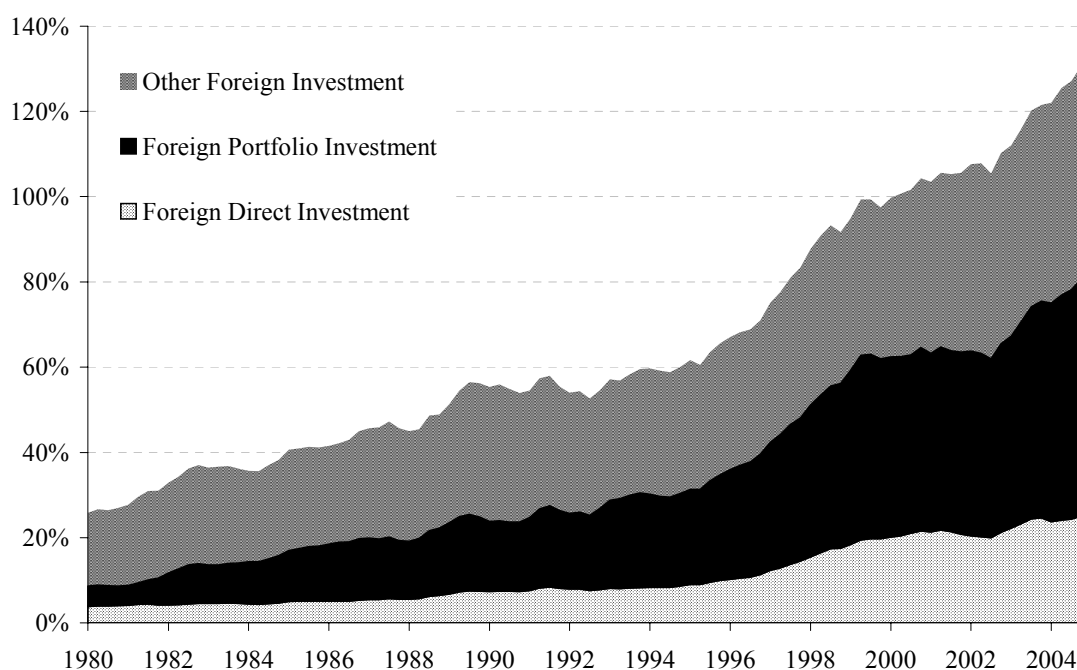
As a percentage of GDP



Source: IMF International Financial Statistics.

Figure 6. Evolution of international liabilities in total and broken into components, OECD

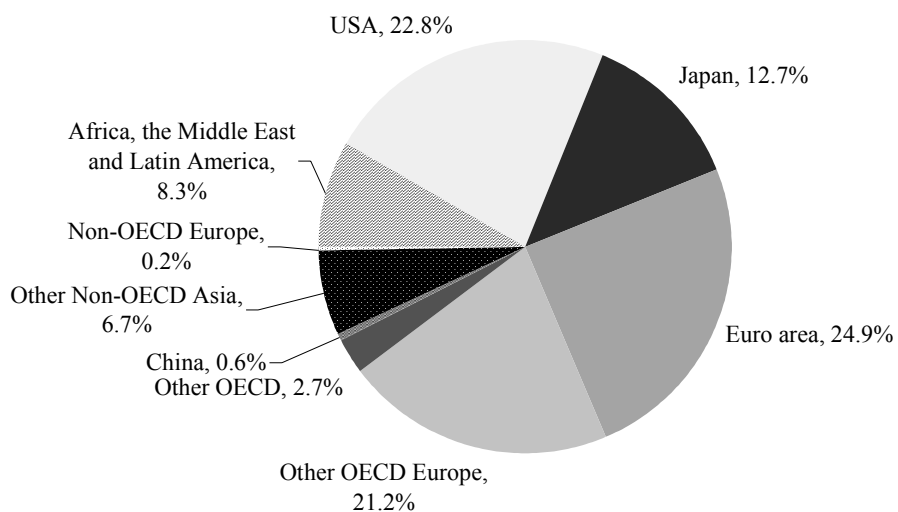
As a percentage of GDP



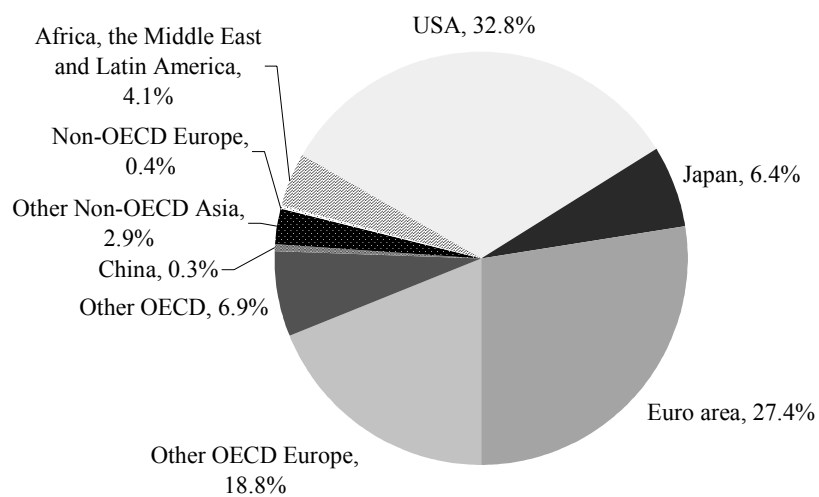
Source: IMF International Financial Statistics.

Figure 7. Regional composition of FPI holdings in 2004

As a percentage of world total



Assets

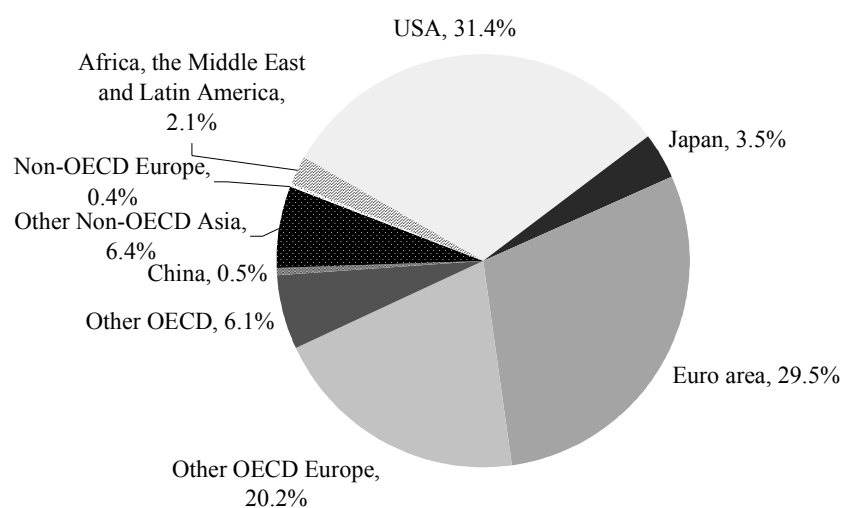
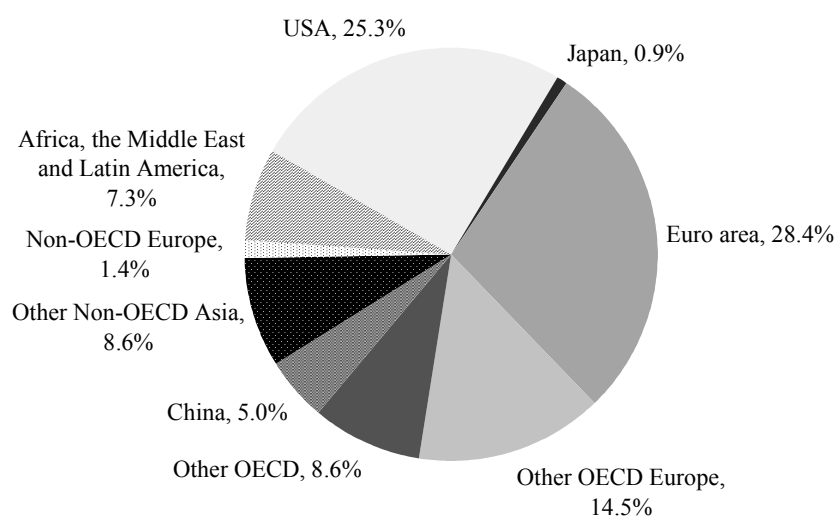


Liabilities

Source: IMF International Financial Statistics.

Figure 8. **Regional composition of FDI holdings in 2004**

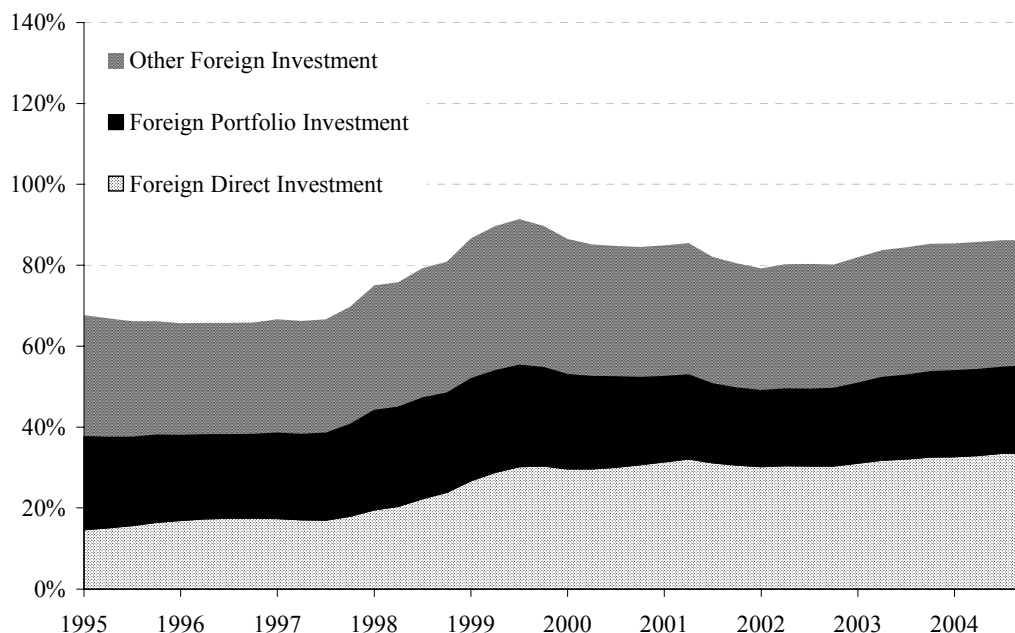
As a percentage of world total

*Assets**Liabilities*

Source: IMF International Financial Statistics.

Figure 9. Evolution of international liabilities in total and broken into components, non-OECD economies

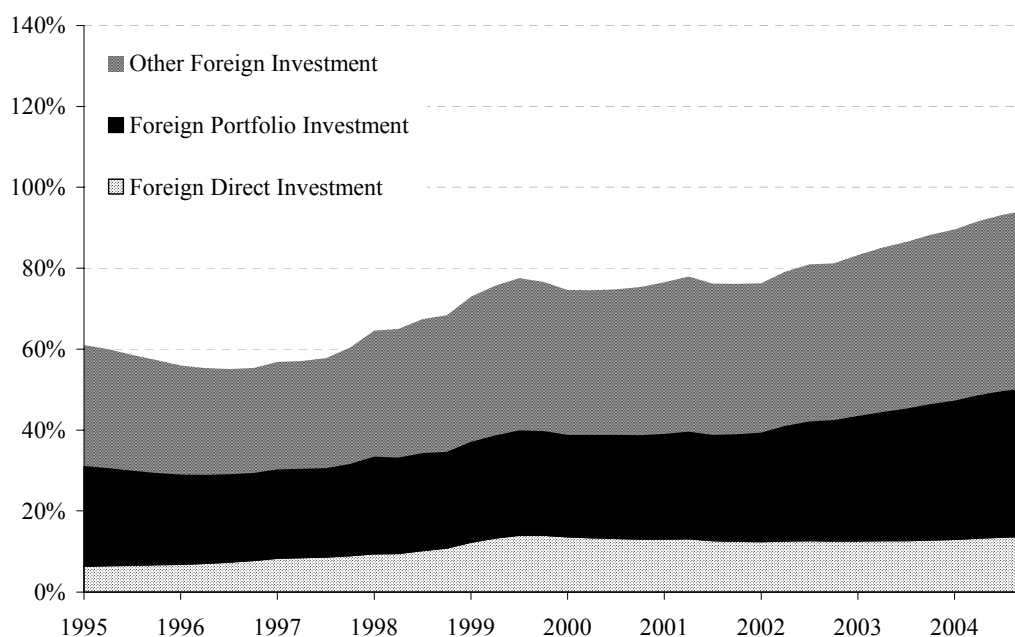
As a percentage of GDP



Source: IMF International Financial Statistics.

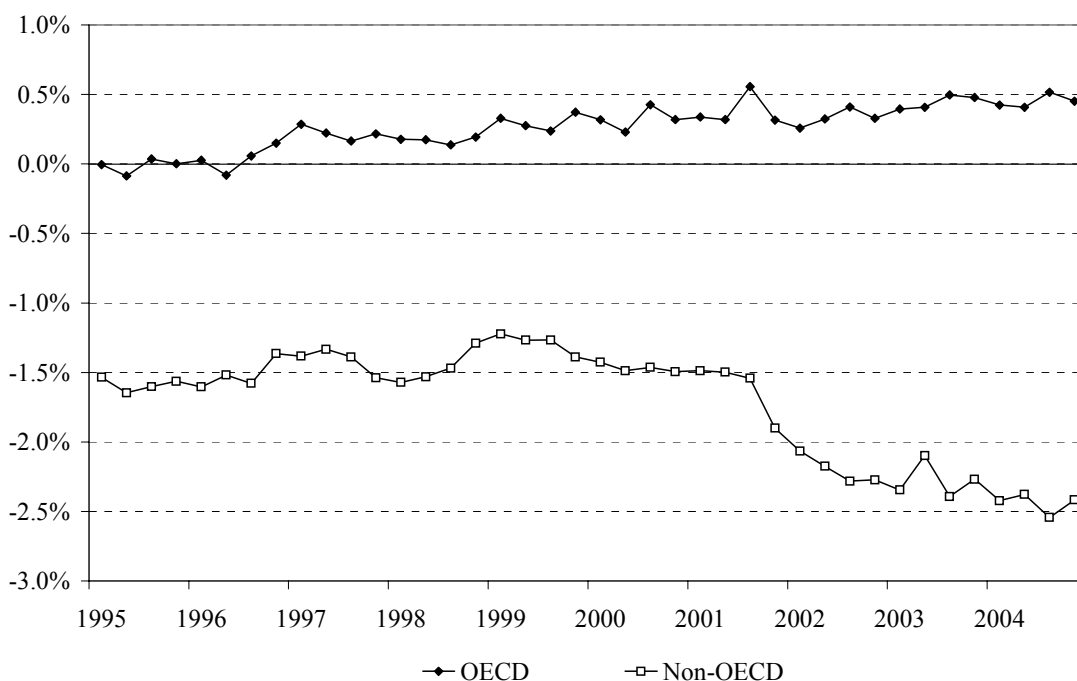
Figure 10. Evolution of international assets in total and broken into components, non-OECD economies

As a percentage of GDP



Source: IMF International Financial Statistics.

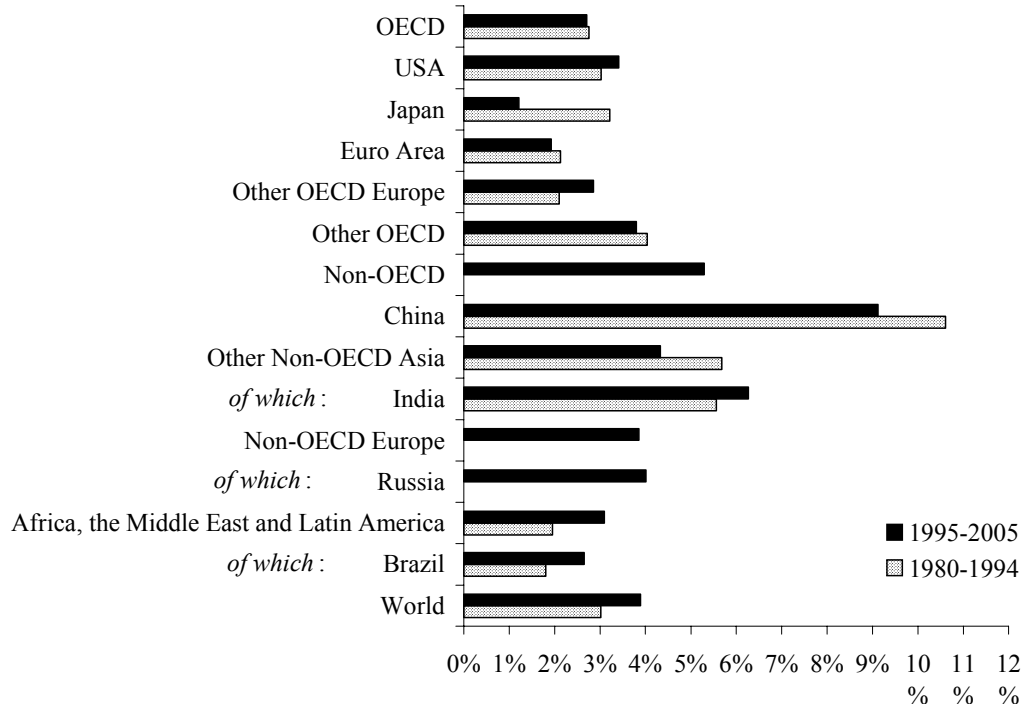
Figure 11. Yield differentials



Note: The yield differential is calculated as the interest rate earned on external assets minus the interest rate paid on external liabilities.

Source: IMF International Financial Statistics.

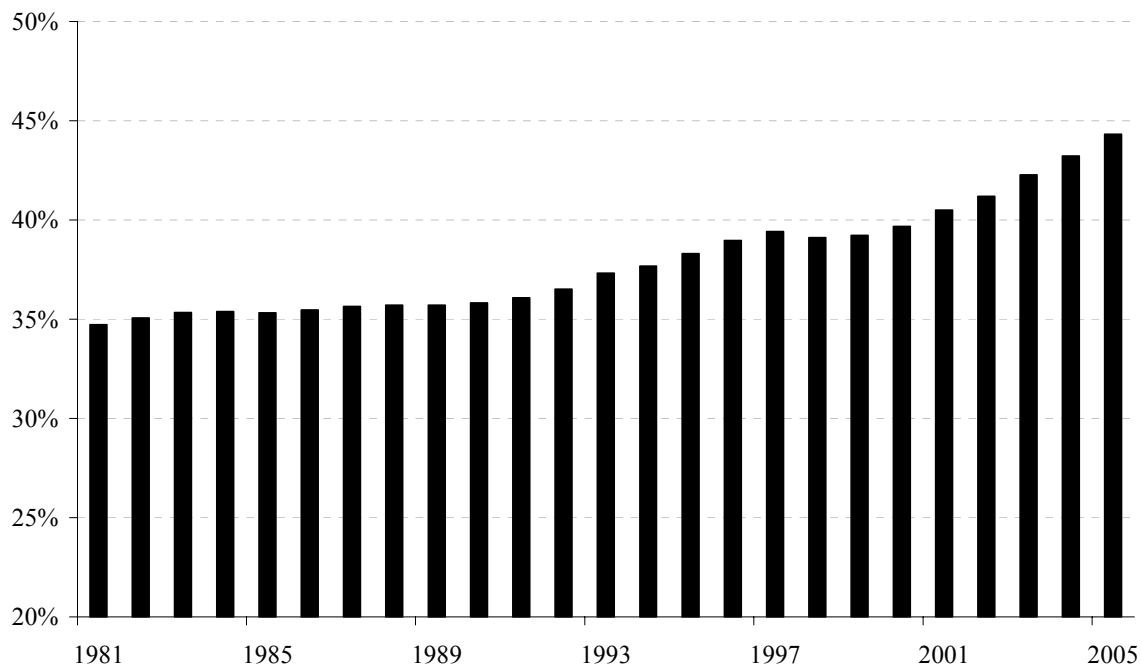
Figure 12. GDP growth



Source: OECD Economic Outlook database, World Bank World Development Indicators.

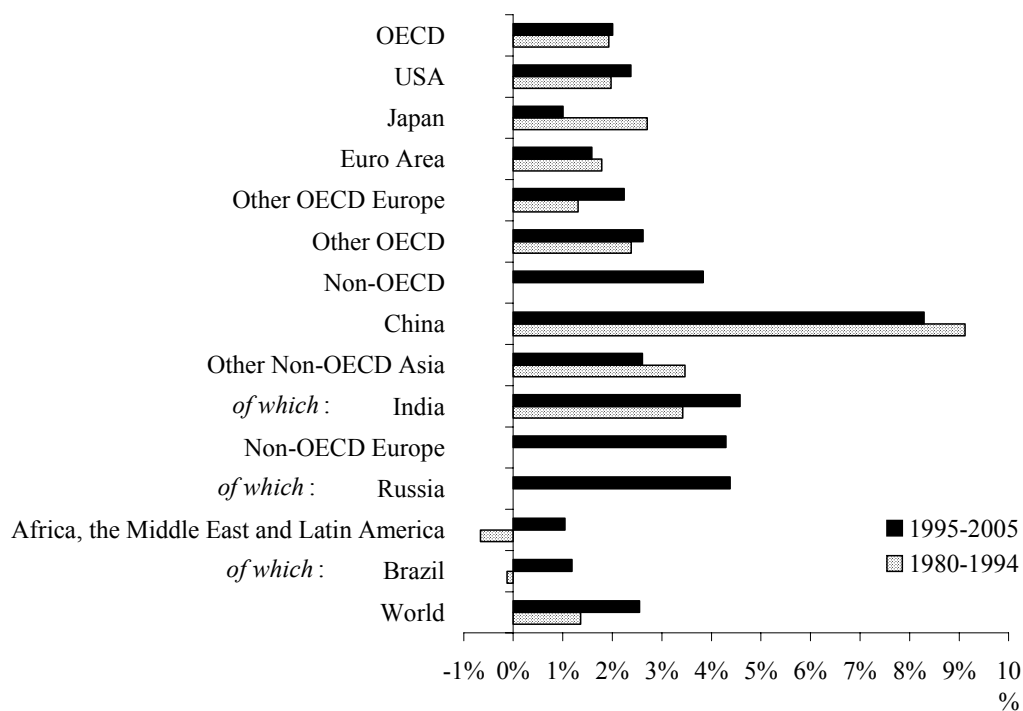
Figure 13. Share of non-OECD countries in world GDP

Volume, 2000 PPP US\$



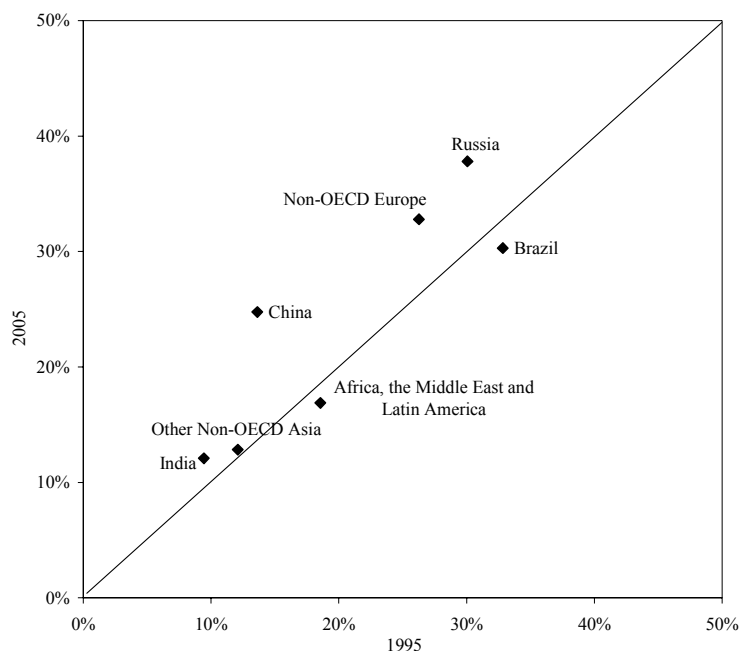
Source: OECD Economic Outlook database.

Figure 14. GDP per capita growth



Source: OECD Model database, World Bank World Development Indicators.

Figure 15. GDP per capita relative to the OECD average
Volume, 2000 PPP US\$



Note: The diagonal line represents no change in GDP per capita shares relative to the OECD average. Brazil is part of the region Africa, Middle East, Latin America. India is part of the region Other Non-OECD Asia. Russia is part of the region Non-OECD Europe.

Source: OECD Economic Outlook database, World Bank World Development Indicators.

Figure 16. GDP per capita -- continued globalisation scenario
2000 PPP US\$

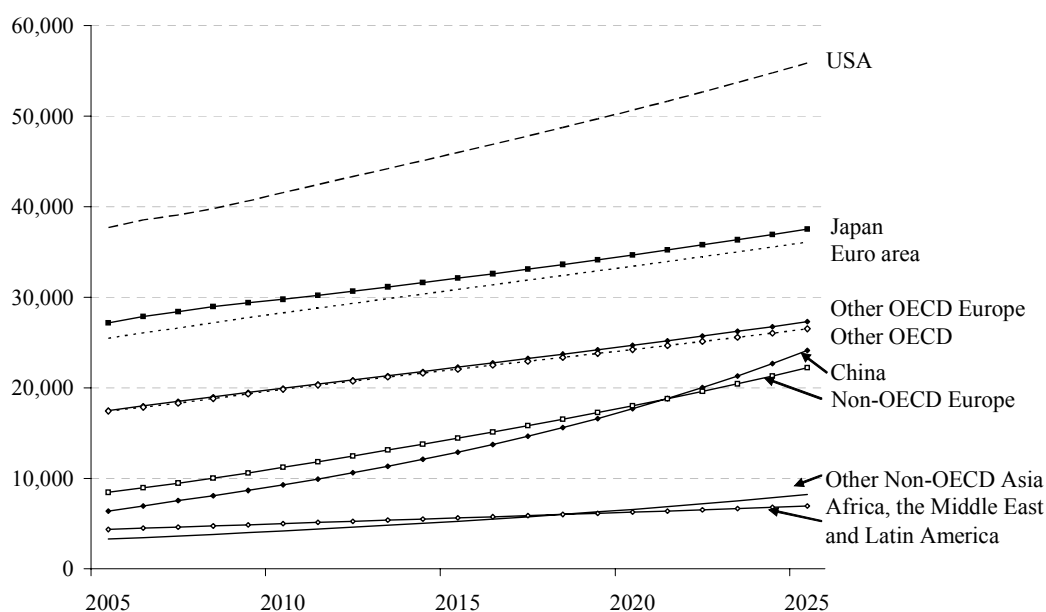
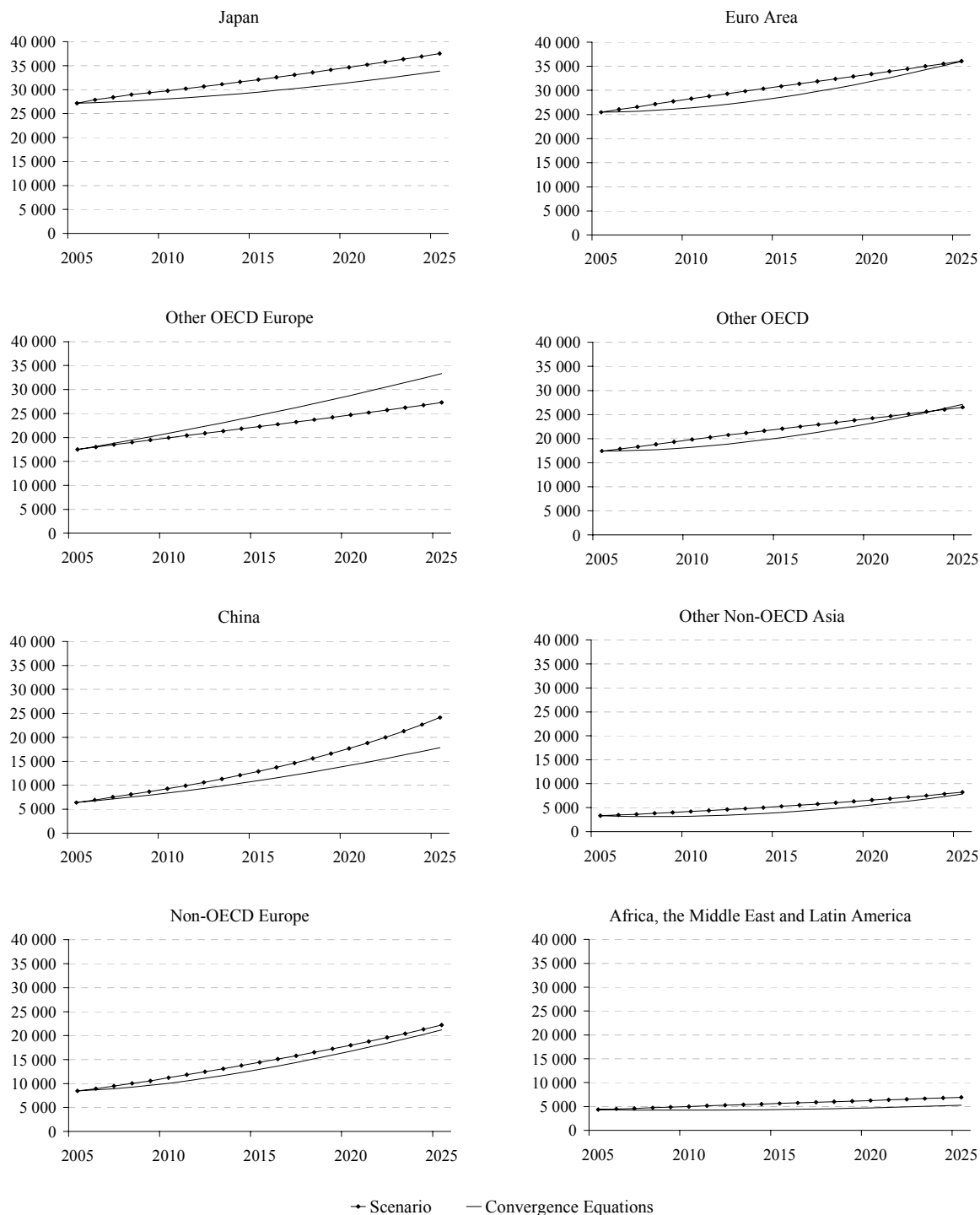


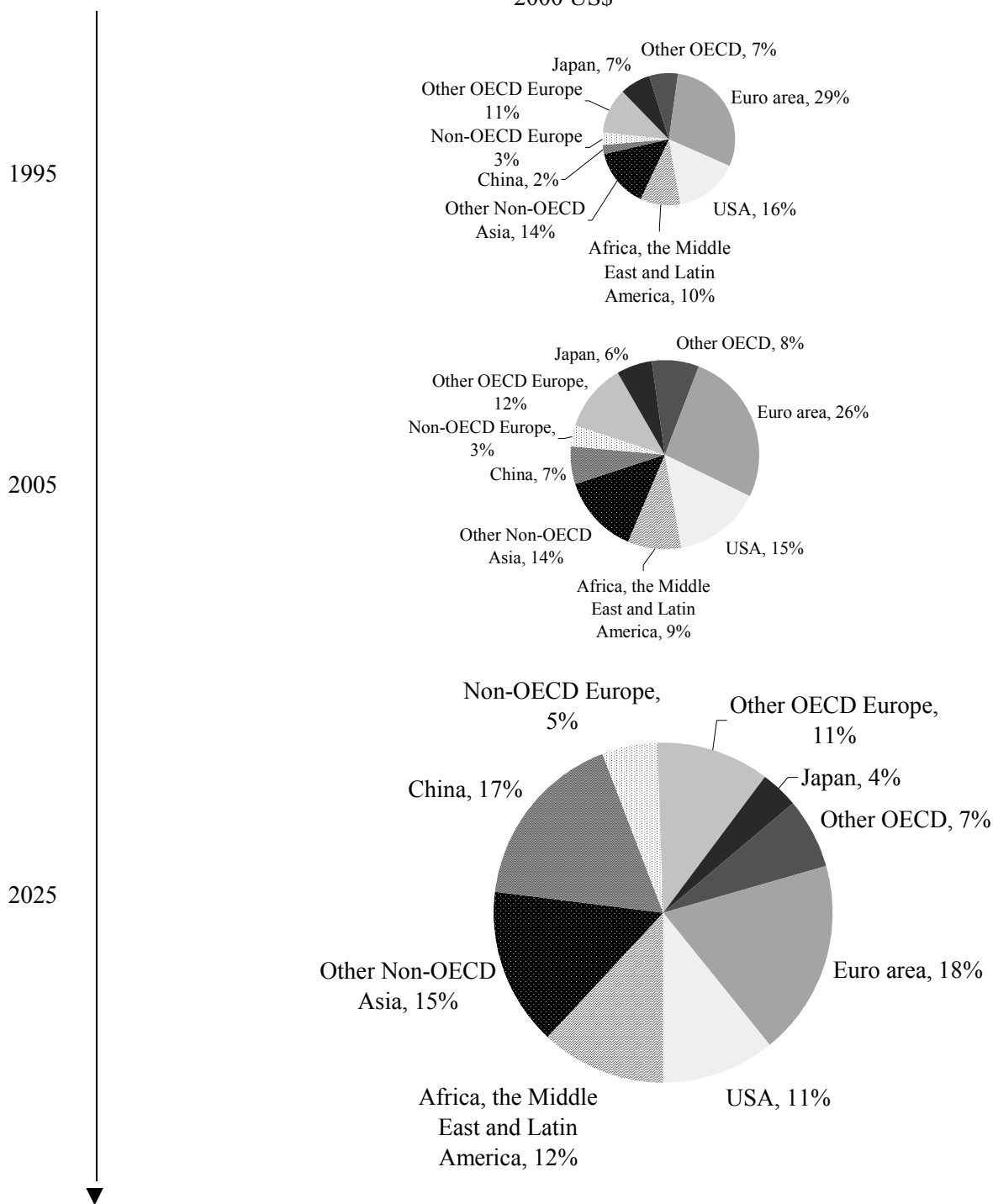
Figure 17. GDP per capita comparisons -- continued globalisation scenario

PPP US\$



Note: The graphs compare GDP per capita for the continued globalisation scenario with the predicted values of the convergence equations as described in Box 3 of the main text and Table 1.

Figure 18. **Regional composition of world trade -- continued globalisation scenario**
2000 US\$

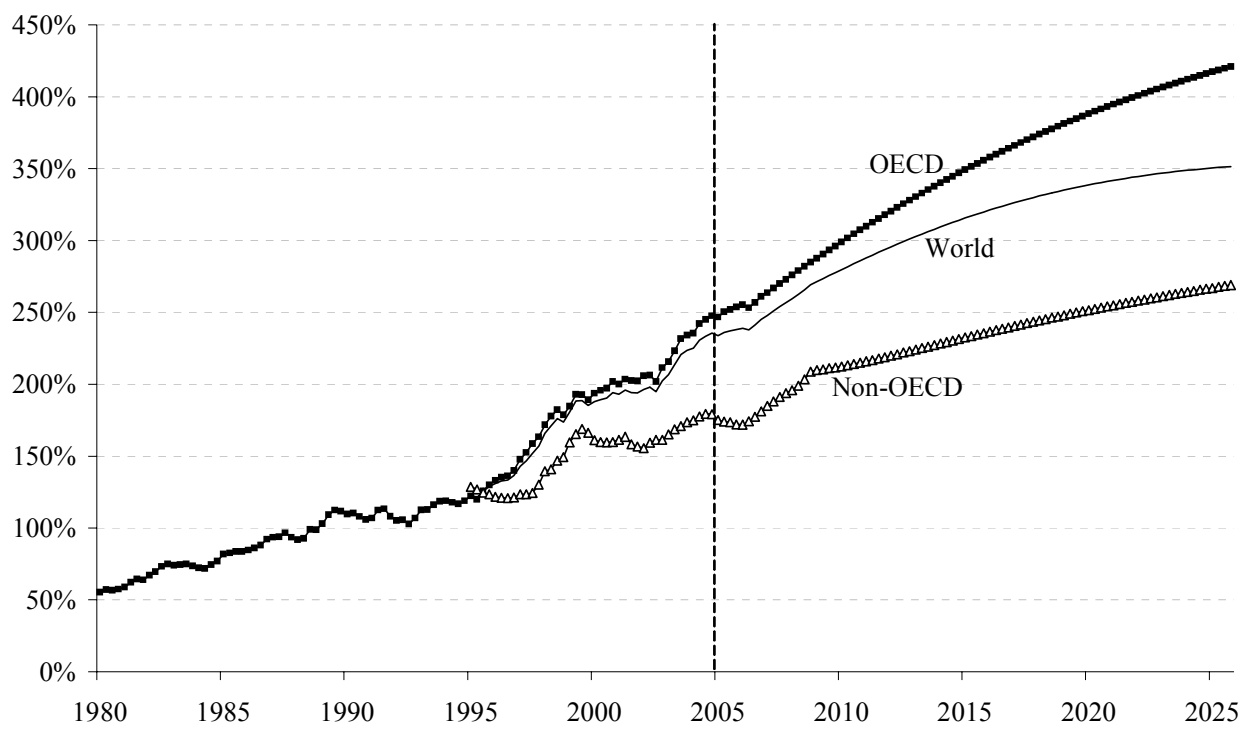


Note: Trade is defined as exports plus imports. The regions are not consolidated. *i.e.* intra regional trade is included.

Source: OECD Economic Outlook database.

Figure 19. **International financial integration -- continued globalisation scenario**

Percentage points



Note: Financial integration is measured as the ratio of the total stock of foreign assets plus liabilities to GDP.

Figure 20. **Regional composition of foreign asset holdings in 2025 -- continued globalisation scenario**

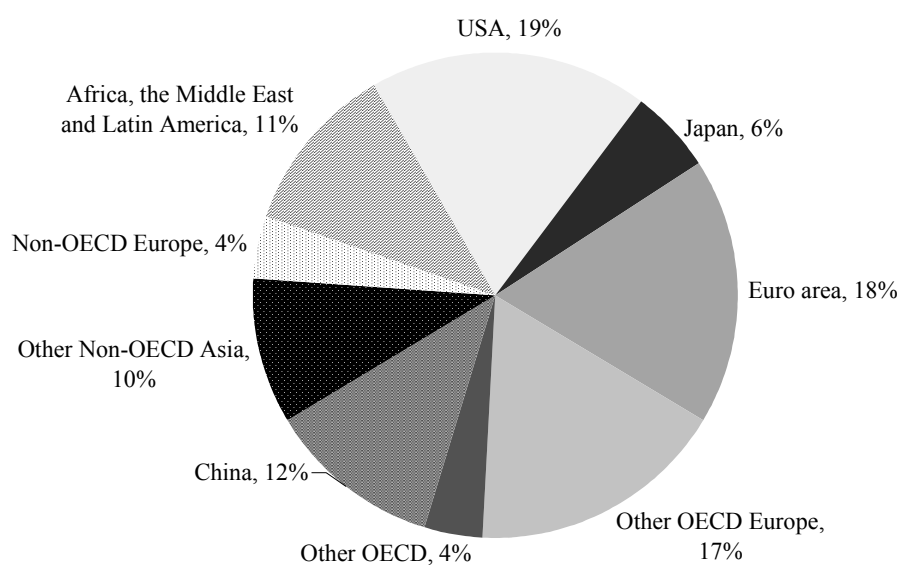


Figure 21. **Regional composition of foreign liability holdings in 2025 -- continued globalisation scenario**

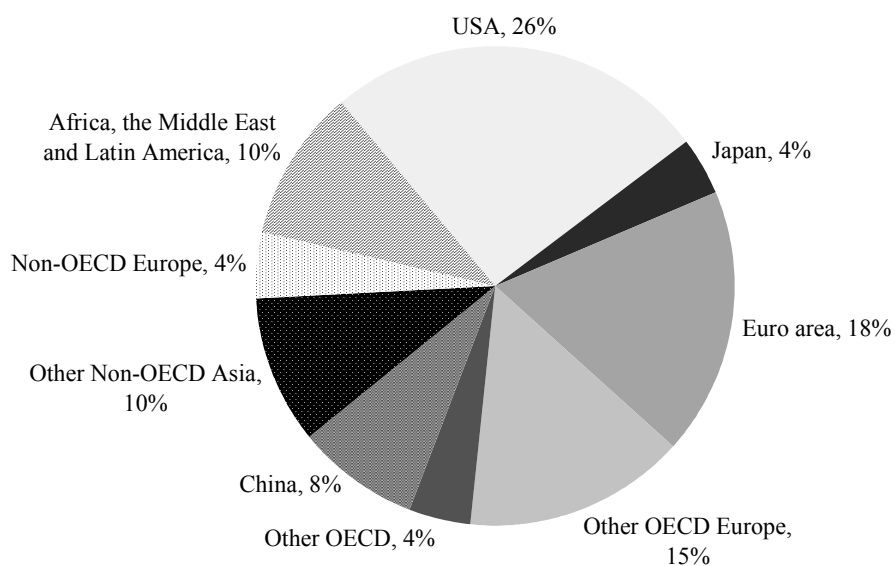
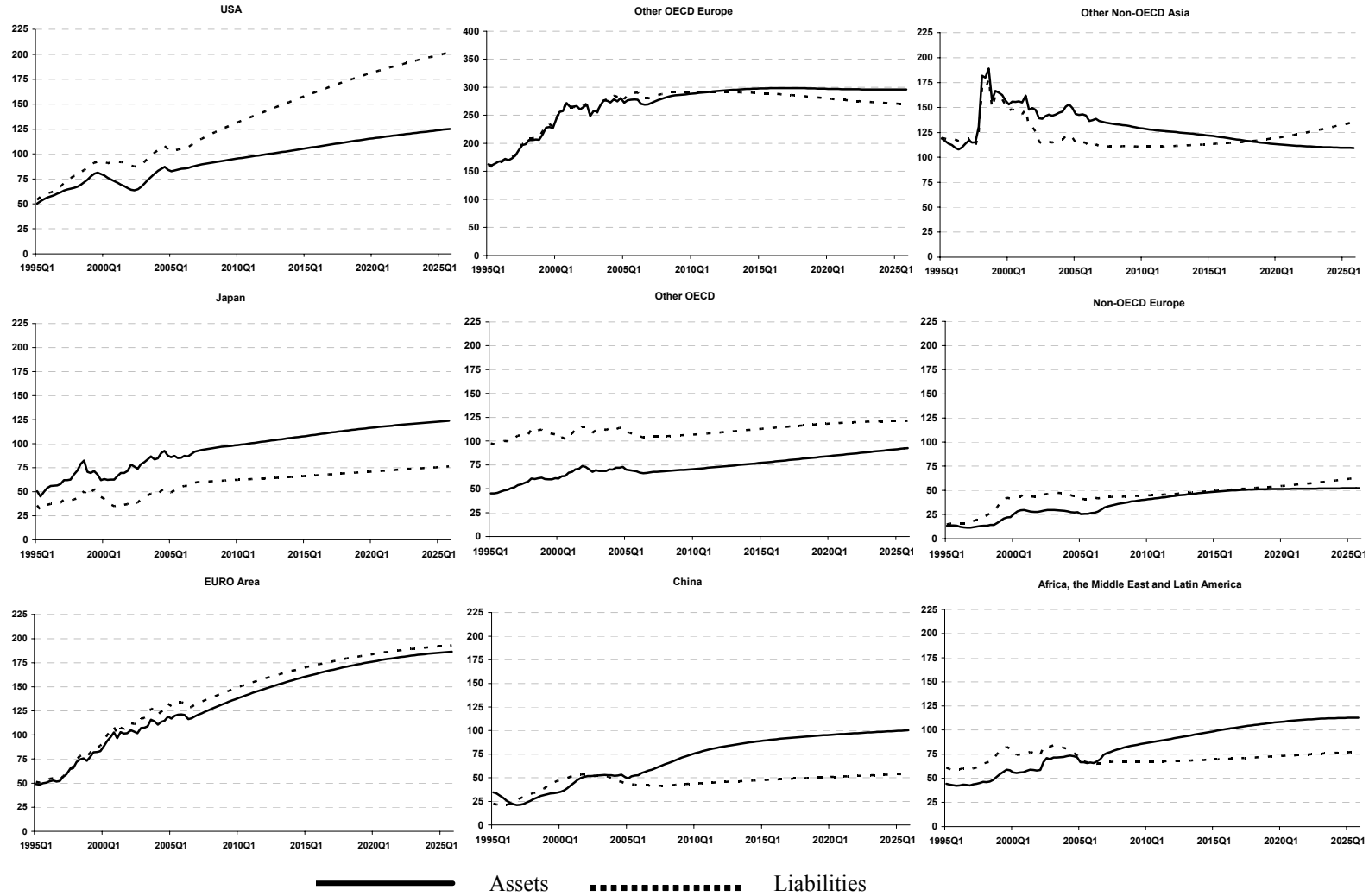
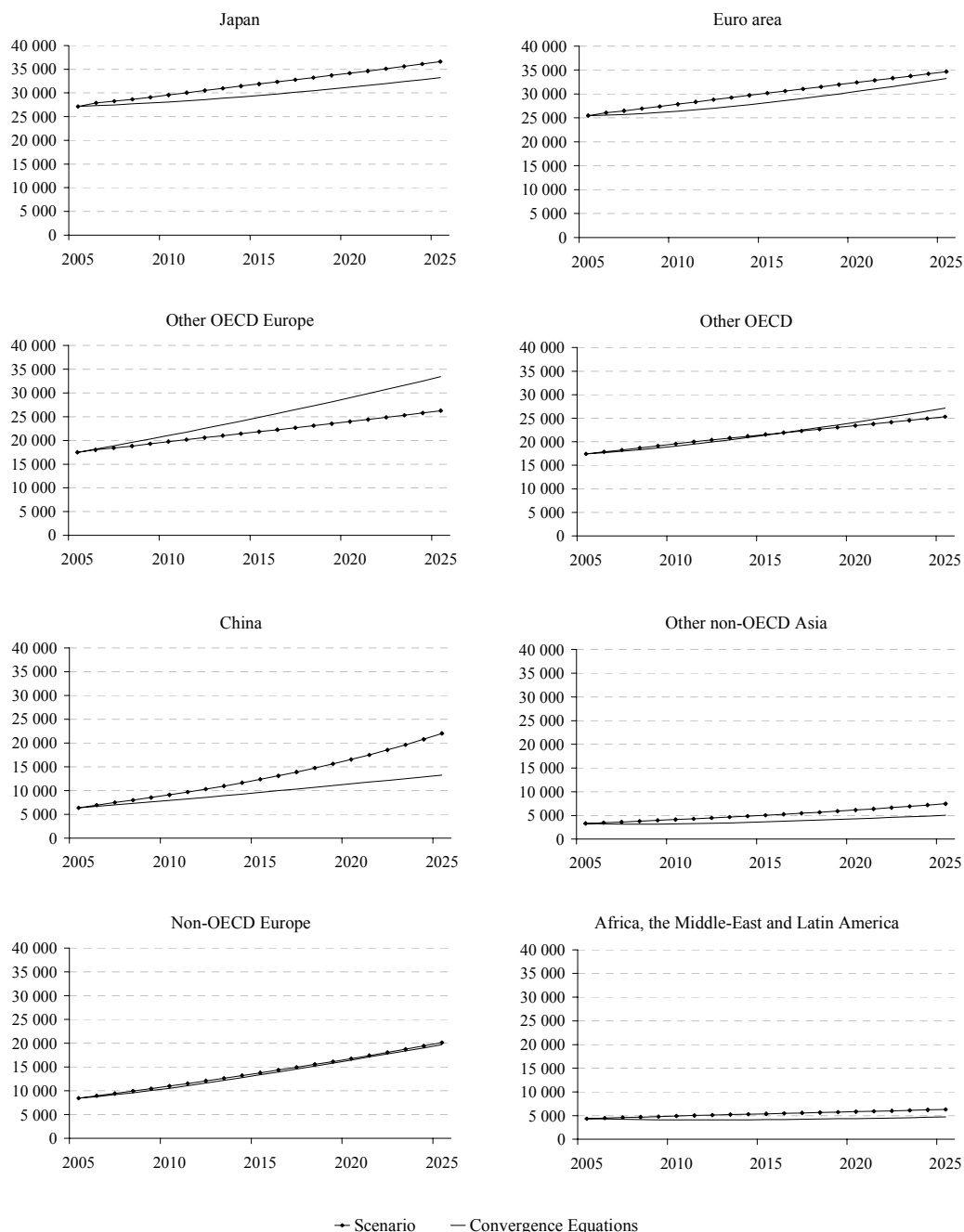


Figure 22. International assets and liabilities -- continued globalisation scenario
As percentage of GDP



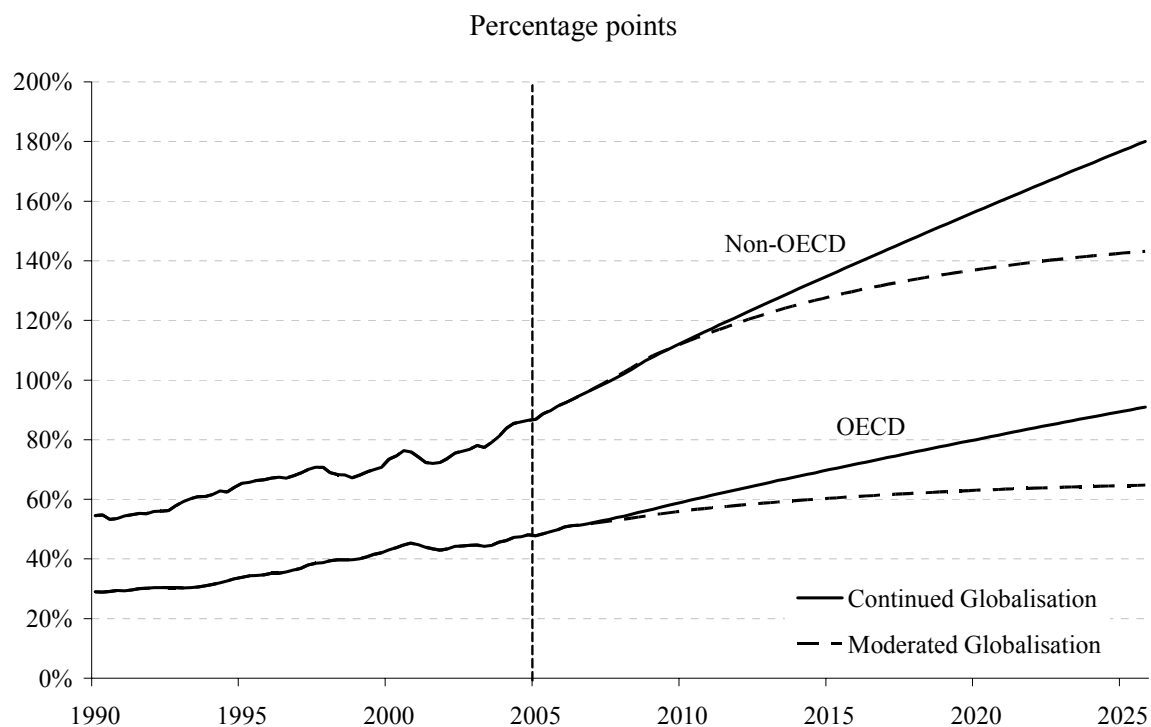
Note: The scale is different for other OECD Europe.

Figure 23. GDP per capita comparisons -- moderated globalisation scenario
PPP US\$



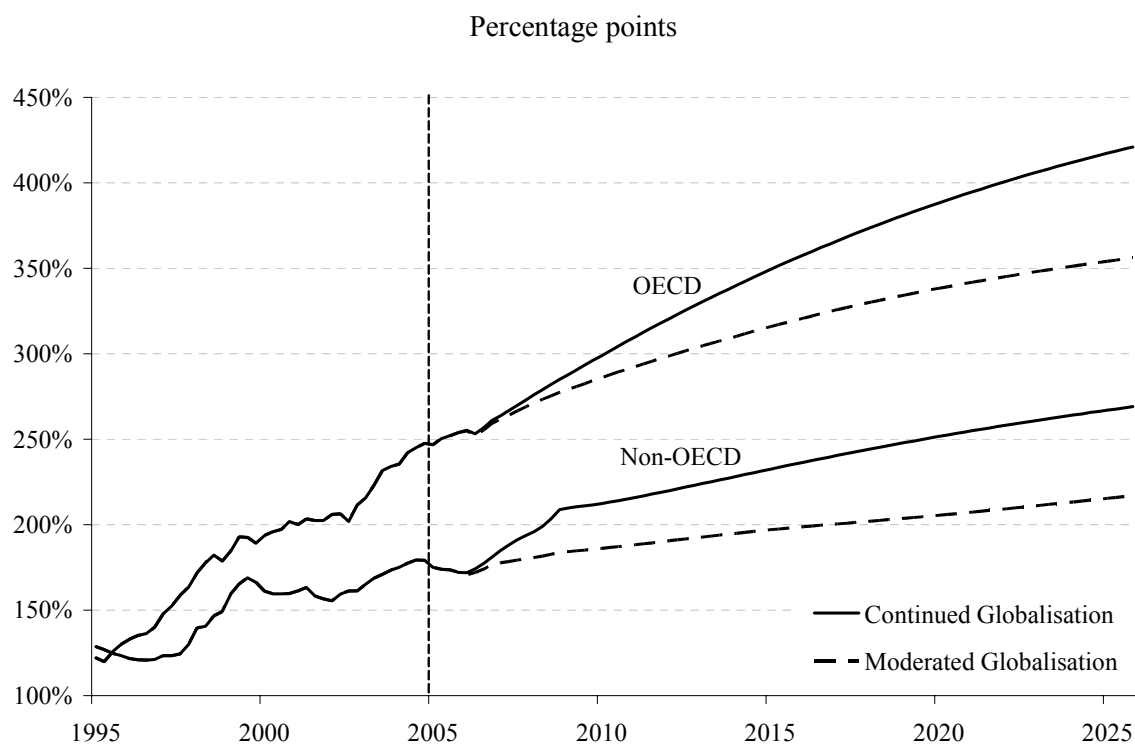
Note: The graphs compare GDP per capita for the continued globalisation scenario with the predicted values of the convergence equations as described in Box 3 of the main text and Table 1.

Figure 24. Trade integration -- comparison of continued and moderated globalisation scenario



Note: Trade integration as measured by the ratio of exports plus imports to GDP, both in volume terms.

Figure 25. Financial integration -- comparison of continued and moderated globalisation



Note: Financial integration as measured by the ratio of the world's total stock of foreign assets plus liabilities to its GDP.

Figure 26. **Regional composition of foreign assets holdings in 2025 -- moderated globalisation scenario**

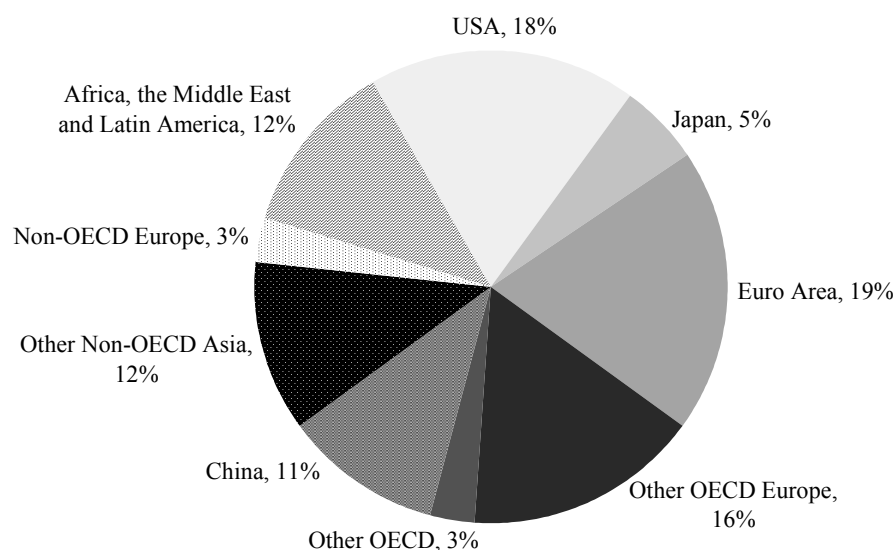


Figure 27. **Regional composition of foreign liability holdings in 2025 -- moderated globalisation scenario**

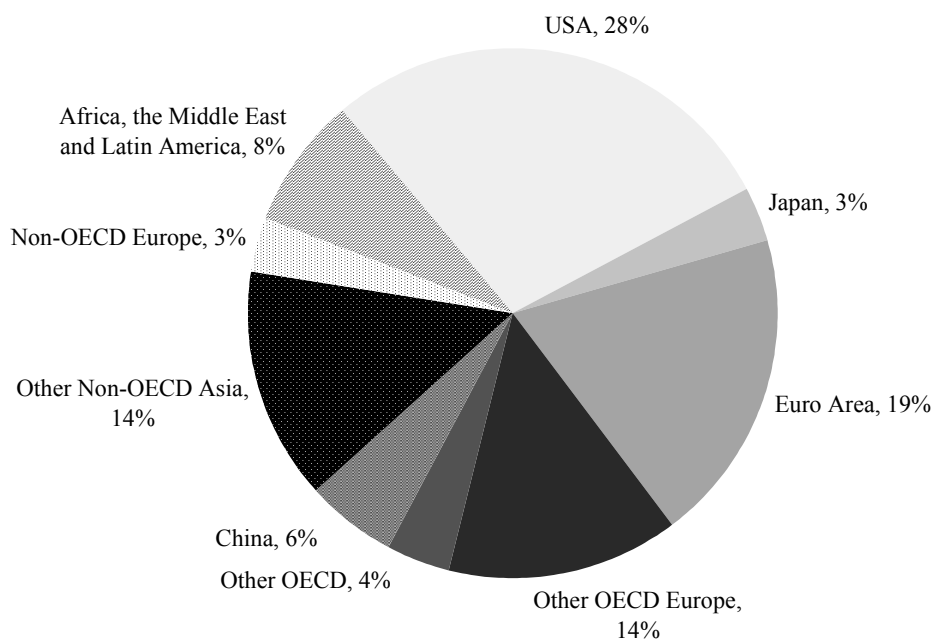
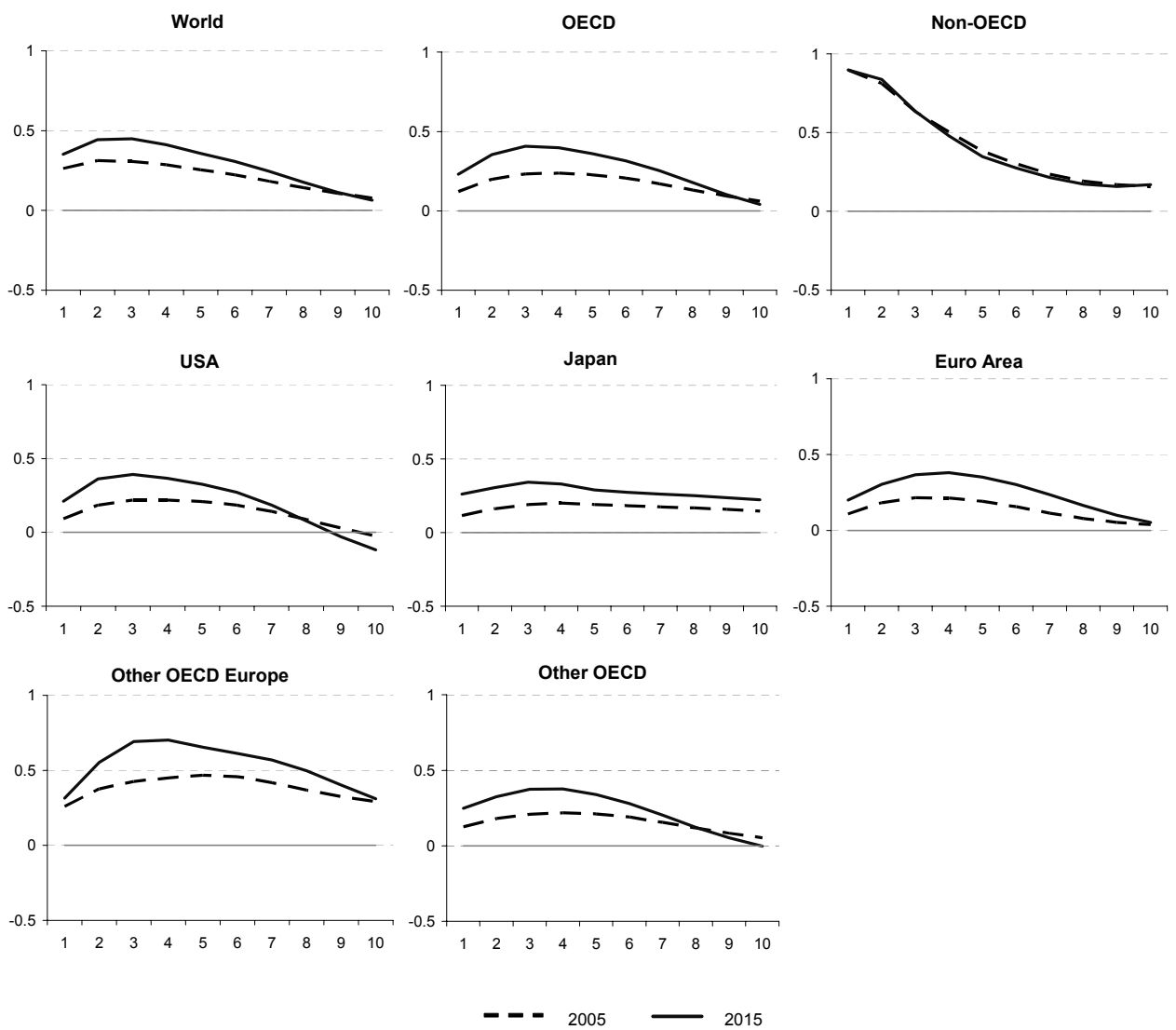


Figure 28. Increase in non-OECD domestic demand

GDP, volumes

Percentage points deviation from baseline

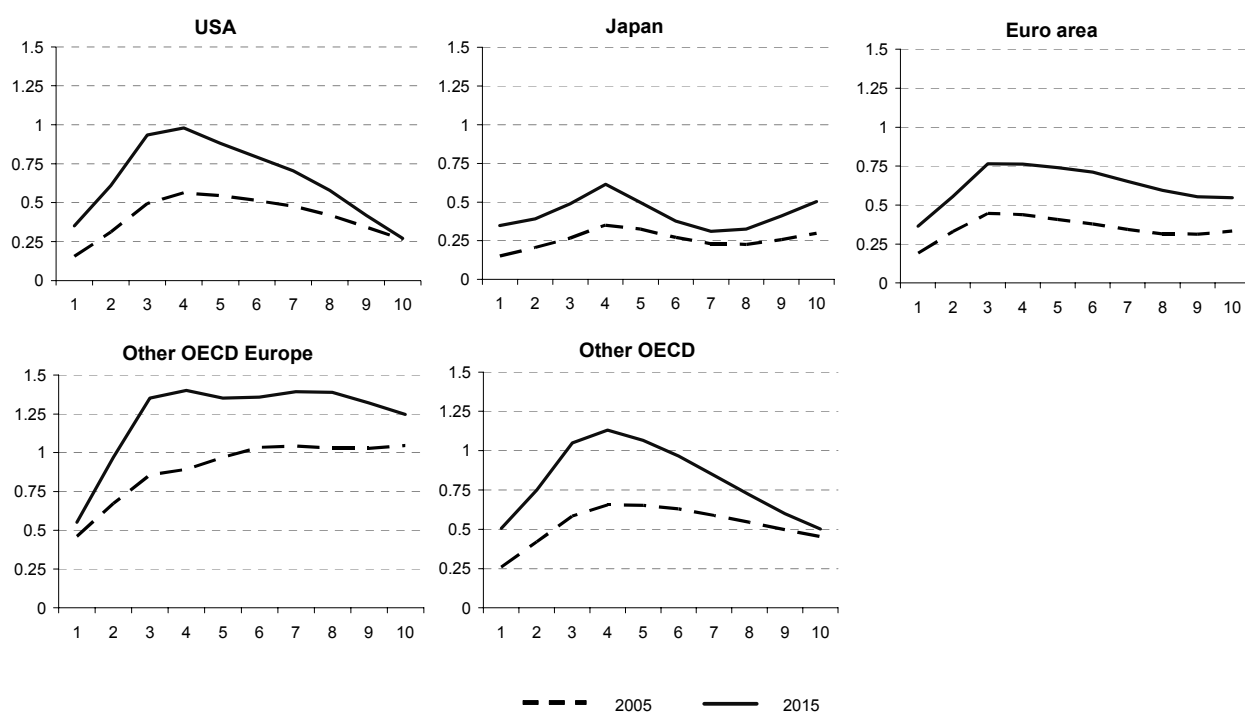


Note: The simulated effects of an ex-ante reduction of non-OECD domestic demand equal to 1% of GDP. See section 4.1 of the main text and Annex 2 for further details.

Figure 29. Increase in non-OECD domestic demand

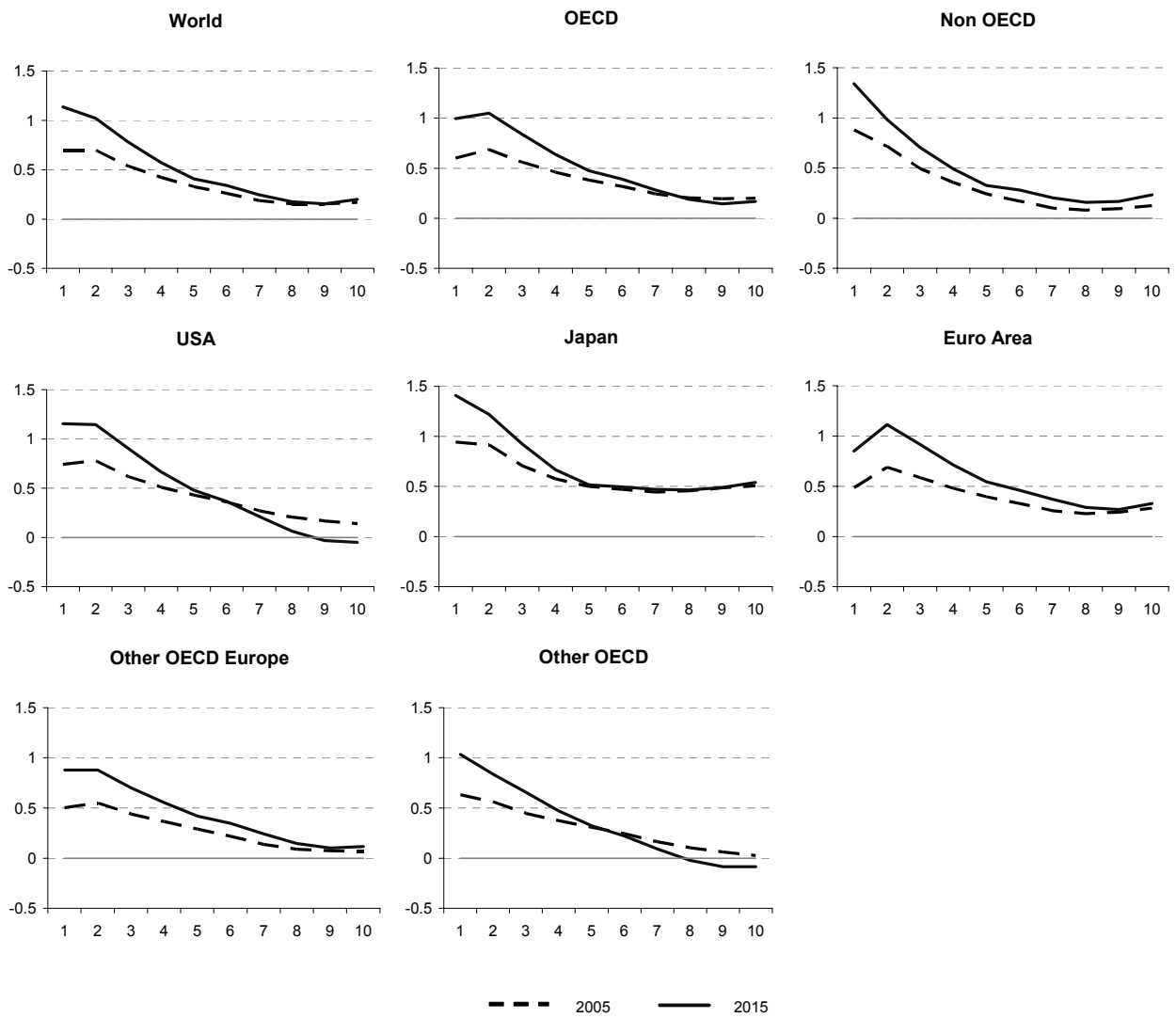
Nominal interest rates

Percentage points deviation from baseline



Note: The simulated effects of an ex-ante reduction of non-OECD domestic demand equal to 1% of GDP. See section 4.1 of the main text and Annex 2 for further details.

Figure 30. Increase in non-OECD domestic demand
Exports of goods and services, volumes
 Percentage points deviation from baseline

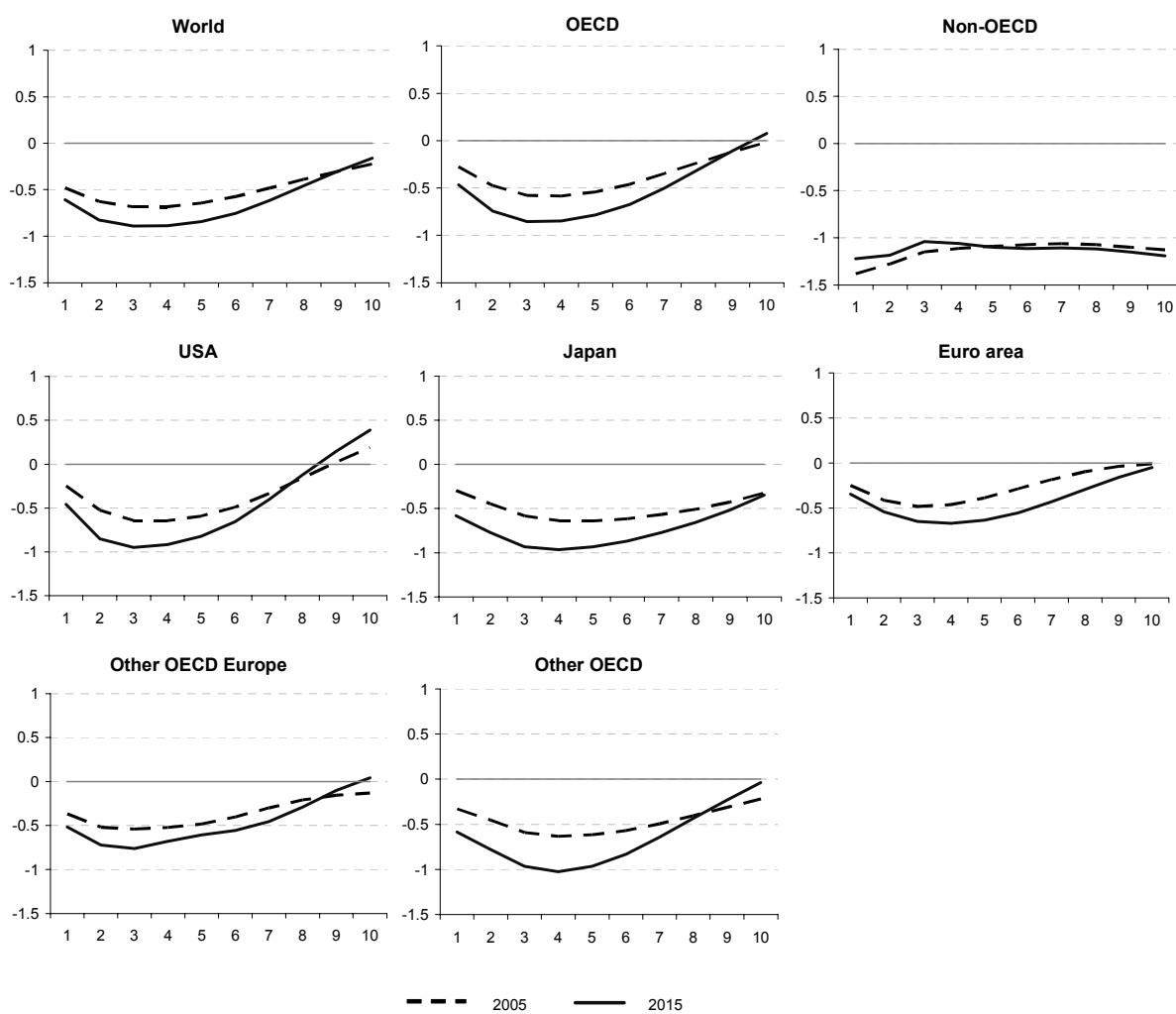


Note: The simulated effects of an ex-ante reduction of non-OECD domestic demand equal to 1% of GDP. See section 4.1 of the main text and Annex 2 for further details.

Figure 31. Financial shock in non-OECD

GDP, volumes

Percentage points deviation from baseline

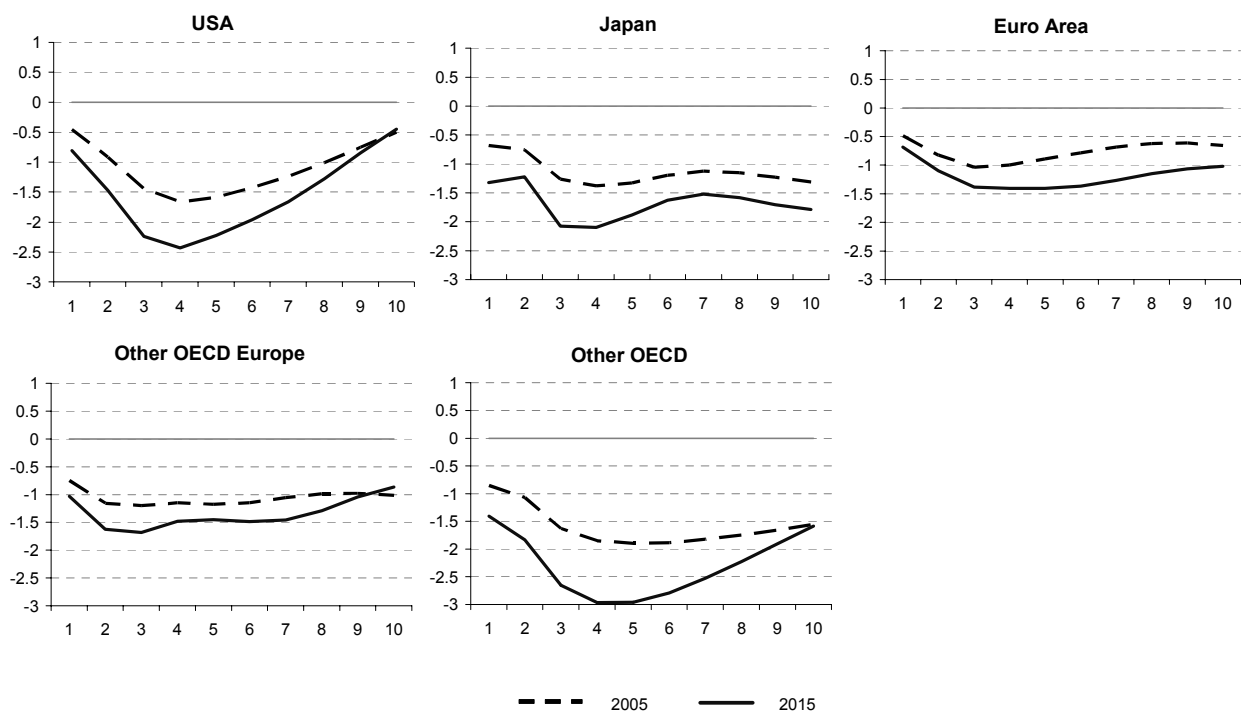


Note: The simulated effects of a sustained financial shock to the non-OECD. See section 4.2 of the main text and Annex 2 for further details.

Figure 32. **Financial shock in non-OECD**

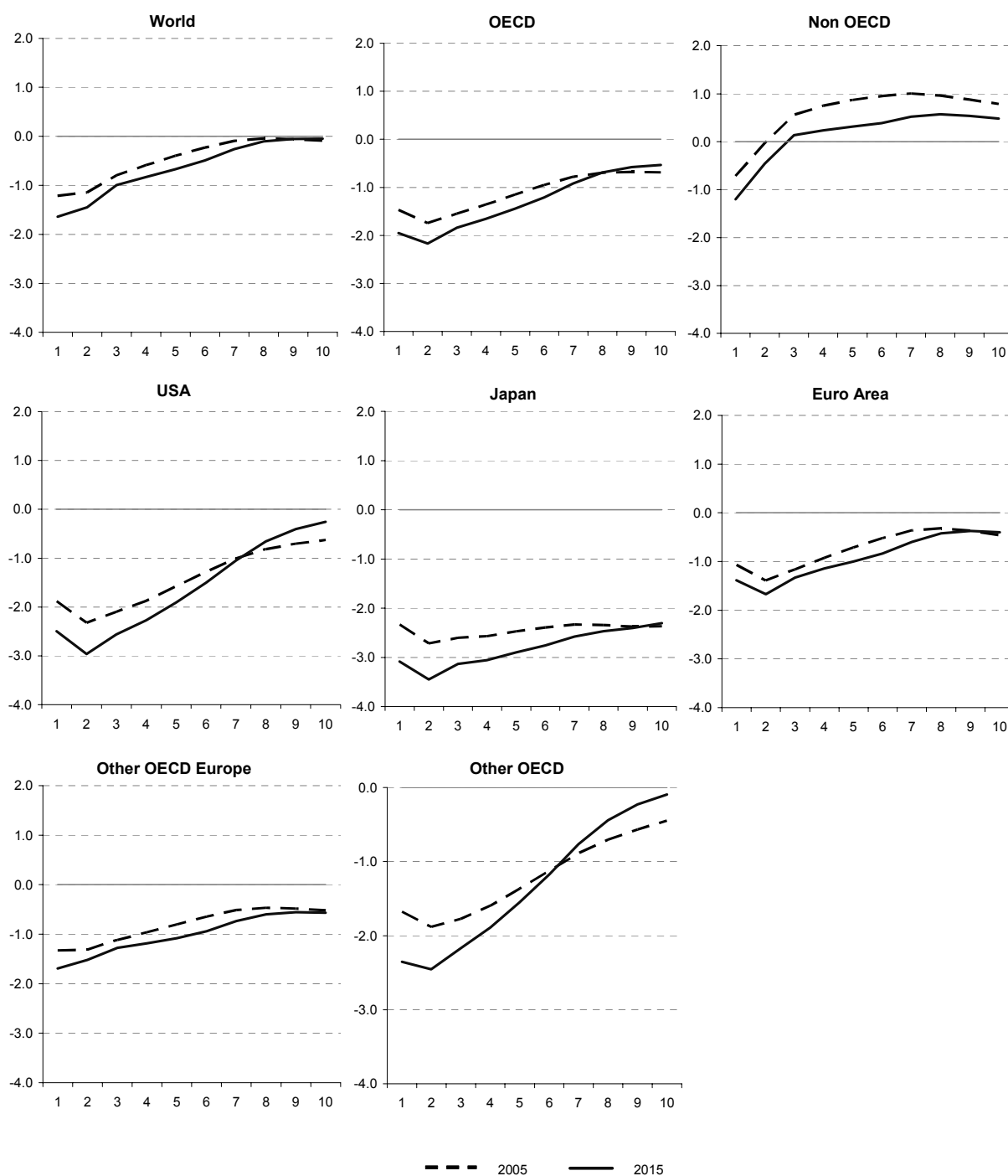
Nominal interest rates

Percentage points deviation from baseline



Note: The simulated effects of a sustained financial shock to the non-OECD. See section 4.2 of the main text and Annex 2 for further details.

Figure 33. **Financial shock in non-OECD**
Exports of goods and services, volumes
 Percentage points deviation from baseline



Note: The simulated effects of a sustained financial shock to the non-OECD. See section 4.2 of the main text and Annex 2 for further details.

ANNEX A. THE STRUCTURE OF THE OECD'S NEW GLOBAL MODEL

A1. Introduction and key features

72. This Annex provides a short overview of the structure and some key properties of the preliminary version of the new global macro-econometric model being developed currently at the OECD. This version of the model was used in the scenario and simulation exercises discussed in the main paper.

73. The new model is smaller and more regionally aggregated than the existing Interlink model (Richardson, 1990; Dalsgaard *et al.*, 2001). It also uses quarterly rather than semi-annual data. There are separate country models for the United States, Japan, the euro area and China, with other economies combined into groups that reflect the strength of trading links with one or more of the individual economies. The rest of the OECD economies are combined into two blocs, "Other OECD Europe" and "Other OECD".³² The other non-OECD economies are partitioned into three blocs – "Other non-OECD Asia", "Non-OECD Europe" and "Africa, the Middle East and Latin America".

74. The new model structure is similar to Interlink in some respects, with each country or region model combining short-term Keynesian-type dynamics with a consistent neo-classical supply-side in the long-run. Nominal rigidities slow the process of adjustment to external events, so that output is largely demand-driven in the short term, but supply-driven in the longer term. The speed of adjustment towards the long term is data determined. Potential output depends on trend productivity, trend employment, trend hours worked and the capital stock (Befy *et al.*, 2006). Trend employment is determined by trend labour force participation and the NAIRU. Most of these factors are exogenous in model simulations unless modified directly. All economies have a constant returns-to-scale Cobb Douglas production function, with the demand for labour and capital derived from the first-order conditions for profit maximisation under imperfect competition.

75. While the new model retains the global focus of Interlink, with an explicit treatment of international trade linkages, it is capable of handling a wider range of shocks and analytical needs. A particularly important modelling extension is the greater degree of stock-flow consistency, both within OECD economies and across countries. Assets and liabilities are modelled explicitly for domestic and overseas sectors, as are the associated income streams. Household expenditure is affected by changes in the real value of household net wealth (financial plus housing).³³ Net household financial assets are affected by household sector net savings and net foreign assets are influenced by the current account balance. Developments in financial markets and housing markets affect the valuation of assets, and hence domestic

32. The Other OECD Europe bloc includes the United Kingdom, Denmark, Sweden, Norway, Switzerland, Iceland, the Czech Republic, Hungary, Poland and the Slovak Republic. The Other OECD bloc consists of Canada, Mexico, Korea, Australia and New Zealand.

33. The model makes an important simplifying assumption that the household sector and the foreign sector ultimately own the company sector in each OECD economy. Households thus see through the "corporate veil". This is not the case for international assets held by non-OECD economies, many of whom have large public sector holdings of foreign exchange reserves.

expenditure, via movements in house prices, equity prices, interest rates and exchange rates. Financial market expectations are adaptive in the preliminary version of the new global model. Alternative mechanisms for generating expectations may be explored in the future.

76. Monetary and fiscal policy settings are endogenous in the model. Monetary policy is set using a Taylor-type rule so as to return consumer price inflation to its baseline level in the medium term. Short-term nominal interest rates respond to any acceleration in inflation and also to movements in the output gap. Long-term government bond rates change if short-term rates change, although the adjustment is only partial. Fiscal stability is ensured by varying the effective direct tax rate on households so as to eliminate any deviation of public sector deficits (as a per cent of GDP) from their baseline levels.³⁴ The short-to-medium-term simulation responses of the model are sensitive to the speed and form of the monetary and fiscal policy adjustments.

A2. The structure of the model

77. The remainder of this paper provides greater detail on particular features of the structure of the preliminary version of the new global model, including short summaries of selected model properties.

A2.1 Factor demands and domestic costs

78. Output is determined by a Cobb-Douglas production function with two factor inputs -- labour and capital and Harrod neutral labour augmenting technical progress. Labour is specified in terms of total hours worked. The production function is used to derive the specification of the factor demand equations for employment and the capital stock and the specification of domestic costs that enters the domestic price equations. The long run relative capital-labour ratio is equal to the ratio of real producer wages to the real cost of capital. Domestic costs are a weighted average of labour and capital costs, with the weights being the respective long-run factor shares in total output.

79. Adjustment of both labour and capital is data determined, and dependent on output growth and change in relative factor prices. Over the short term, private investment in the United States and the euro area is more responsive to output growth than in the other OECD economies. In contrast, movements in the cost of capital have the largest short-term influence on private investment in the Other OECD Europe and the Other OECD models. The short-term response of hours worked (employment multiplied by hours worked per employee) to output fluctuations and changes in real wages is weaker in Japan and the euro area than in other OECD economies.

80. In the long run the output elasticities in the labour and capital demand equations in all economies are both 1%, reflecting the structure of the production function. Equally, the long-run real wage and real cost of capital elasticities are -1% in the employment and investment equations in all economies.

A2.2 Wages and prices

81. Wages are modelled using a Phillips-type equation, with wage inflation being affected by price inflation, trend productivity growth and the gap between the unemployment rate and the NAIRU. The NAIRU itself is exogenous in the model, being determined in a separate modelling exercise similar to that set out in Richardson *et al.*, (2000).

34. This is the default rule in the model. It would be possible to implement alternative settings, with expenditure rather than taxes being varied to ensure fiscal stability.

82. The price equations are all statically and dynamically homogenous with respect to domestic costs and foreign prices. All have error-correction terms, so that they ultimately determine the respective price levels rather than only the rate of price inflation. Domestic prices and inflation are driven by domestic costs, import prices and movements in the output gap. If output is above potential, prices rise more rapidly than their determinants would suggest. The consumers' expenditure deflator and the investment deflator are weighted averages of domestic value-added prices and import prices. Allowance is also made for changes in indirect taxes and subsidies.

83. Trade prices are determined as in Pain *et al.* (2005). Export prices reflect domestic output prices and competitors' prices. Import prices reflect world "shadow" prices, plus domestic prices in the importing economy. Both trade price equations included a time trend to reflect the long-run tendency of trade prices to decline relative to the general price level. The extent of pricing to market by exporters and exchange rate pass-through by importers varies across countries. They are smallest for the United States, where the long-run pass-through elasticity on import prices is just over 0.3%. In Japan the pass-through elasticity is 0.5%, and in the remaining OECD economies it is around 0.75%.

A2.3 Household consumption

84. Household consumption is ultimately dependent on real disposable income and real net wealth. Income includes labour compensation, government transfers net of taxes and other net non-labour incomes. Net wealth is given by the sum of household financial assets and housing assets, less household financial liabilities. The long-run coefficients on income and wealth are imposed to sum to unity, so that the long-run saving ratio is ultimately a function of the ratio of net wealth to income. This wealth equilibrium for the household sector, along with the solvency condition for the public sector (as embodied in the fiscal rule) tie down the net asset holdings of the foreign sector. In the short term expenditure is also affected negatively by increases in consumer price inflation and interest rates.

85. The long-run elasticity on real net wealth is highest in the United States, at 0.3%, and smallest in the euro area, at 0.15%. By construction, the long-term response of consumption to a change in real incomes is thus higher in the euro area than elsewhere. In the shorter term, the differences across economies are less marked, with the Other OECD Europe model having the highest short-term response of consumption to a change in wealth in the first year. The euro area has the highest short-term response of consumption to a change in real disposable incomes.

A2.4 Export and import volumes

86. The trade volume equations have a similar structure to those estimated by Pain *et al.*, (2005). Export volumes depend on external demand and relative export prices. External demand is given by a weighted average of import volumes in trading partners. Import demand in the OECD and the non-OECD economies depends on the composition of final expenditure in the importing economy and relative import prices. Different types of domestic expenditure have different marginal import propensities. Export volumes, fixed investment and inventories are the categories of final expenditure with the highest import content in the OECD economies.

87. The long-run properties of the trade equations are such that a 1% rise in import volumes in all economies will raise export volumes by 1% in all economies in the long-run. Equally, a 1% rise in all categories of final expenditure will ultimately raise import volumes by 1% in all economies. Exports from the non-OECD economies, especially in Asia, and from Japan are found to more sensitive to movements in relative prices, having long-run elasticities at or above -1%. The remaining OECD economies have long-run export price elasticities between -0.35% and -0.6%. Import volumes are less sensitive to relative price

movements than are export volumes in most economies, with long-run price elasticities being between -0.3% and -0.65% in all OECD economies.

A2.5 The public sector

88. The public sector has a set of equations covering government expenditure, current revenues (taxes), interest payments and transfers. Non-interest expenditure comprises final consumption, fixed capital investment and transfer payments to the private sector and the foreign sector. Government revenues include personal direct taxes (personal income taxes and social security contributions), corporate taxes and indirect taxes. Government deficits are assumed to be bond financed. Interest payments depend on the existing gross debt stock of the government, with the effective rate of interest paid changing only slowly in response to movements in current market interest rates. As discussed above, the long-term stability of the fiscal balance, and hence the debt stock, is ensured by the endogenous fiscal rule used in the model. If there is a permanent rise in final expenditure, tax revenue will need to rise if the fiscal balance and debt stock are to remain at their levels on the baseline.

89. The properties of the model following a fiscal shock are generally similar to those discussed in Richardson *et al.*, (2001). For example, a permanent rise in the level of public consumption equivalent to 1% of GDP has a first year impact on output of around 0.8% in most OECD economies in the preliminary version of the new model used for this study.³⁵ Japan has the highest first year impact at 0.9%. Thereafter the gains to GDP begin to disappear, reflecting higher real interest rates, falling asset prices, a loss of competitiveness stemming from higher domestic costs and output prices and the adverse impact of higher direct taxes on household incomes. After five years, output is at or below baseline levels in all economies apart from Japan, where it takes eight years for output to fall below baseline levels.³⁶ In the very long run, output returns close to baseline levels in all economies. Consumers' expenditure is between 1½-3 per cent below baseline levels after ten years in each OECD economy in which this fiscal shock is undertaken, reflecting in part the scale of the direct tax rises needed to return the fiscal balance to baseline levels.

A2.6 Financial assets and liabilities

90. International assets and liabilities are split into three categories -- foreign direct investment (FDI), foreign portfolio investment (FPI) and a residual category. This residual category includes banking sector international assets and liabilities and foreign exchange reserve holdings. The value of all three categories is affected by movements in bilateral exchange rates in the new global model, with the impact of a change in any individual bilateral rate depending on the structure of asset and liability holdings, as reflected in a (partially estimated) matrix of bilateral asset and liability holdings in 2005. Movements in equity prices also affect the valuation of portfolio investment assets and liabilities.³⁷

91. Households are assumed to hold four financial assets -- liquid assets, equities, bonds and other assets. Total household net wealth is the sum of total financial assets plus housing assets less total financial liabilities. The value of domestic assets is affected directly by changes in foreign asset prices and exchange rates as well as by movements in domestic equity, bond and house prices.

35. The shock is undertaken in each OECD economy in turn, rather than in all economies collectively.

36. This reflects a high degree of nominal inertia in the Japan model. Domestic prices rise only slowly in response to an increase in the output gap.

37. In principle equity price movements could also affect the value of FDI assets and liabilities if they are measured at market values rather than book values. This effect is not incorporated in the preliminary version of the new model.

92. The value of equity assets held by households is set equal to the total stock of domestic equities plus equities held abroad less equities held in the country by the foreign sector. Equities held abroad are given by the sum of outward FDI plus a fixed proportion of outward FPI. Equities held by foreign residents in the domestic economy are given by the sum of inward FDI plus a fixed proportion of inward FPI. Household holdings of bonds are set equal to the government debt stock, plus the domestic stock of corporate bonds, plus the remaining proportion of outward FPI, less the remaining proportion of inward FPI.

93. With the “other assets” category being modelled to include the remaining components of net international assets, total net international assets appear directly in the net wealth of domestic residents. This is an important stabilising mechanism in the model in the medium term.

94. The returns from holding assets and the payments on liabilities are modelled using measures of the implicit rate of return and the asset and liability stocks. The implicit returns are mainly modelled as a mark-up on some measure of interest rates, with the size of the mark-up being calibrated from the level of the implicit rates of return over the recent past. For international investment income, the preliminary version of the model has only equations for total payments and total receipts.

A2.7 International linkages

95. Individual economies are linked together through international trade (volumes and prices), international capital markets, the returns from international assets and liabilities and the impact of changes in global demand on commodity prices (Pain *et al.*, 2006). The consistency of trade and capital flows at the global level is ensured by a set of adjustment mechanisms that insure that the growth rate of export volumes is equal to that of import volumes and that changes in international liabilities and international investment income payments are reflected fully in international assets and investment income receipts.

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