Special Analysis

Macroeconomic imbalances in the emerging countries: reduced risks for the advanced economies

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During the 1990s, many of the emerging countries based their growth model on major external imbalances: large current account deficits, high levels of public and private debt serviced by short term foreign capital, and a poorly regulated banking system. On several occasions these different imbalances, in a context of fixed exchange rate systems, led to crises in the balance of payments, for example the Asian crisis of 1997-1998.

In the course of the 2000s, in contrast, the emerging countries changed their growth model: current account deficits were reduced, exchange rate regimes eased, foreign exchange reserves increased, banking systems were cleaned up, dependence on external financing was reduced. They experienced a period of tremendous growth, unprecedented in their history, so much so that today they represent half of all global wealth produced.

Today some of the emerging countries are once again showing major external macroeconomic imbalances: this is the case, for example, of Brazil, India, Indonesia, Turkey and South Africa. Indeed, the abundance of global liquidity guaranteed by accommodating monetary policies in the developed countries, put in place in the wake of the Recession, has led to some substantial capital inflows into the emerging economies. Since 2013, however, the slowdown in these economies and the signs that a return to normal of American monetary policy is on its way have resulted in several episodes of strong financial tension, leading to fears of a marked slowdown, if not a crisis, in the emerging countries. The reforms achieved during the 2000s, however, make such a scenario much less likely than in the 1990s.

However, if there were to be a downturn in one or more of the emerging economies, the advanced economies would suffer the consequences. The increased integration of trade links at global level means that the effects on trade would be felt much more keenly. A drop in imports by the emerging economies, which account for 35% of exports from the advanced countries, would lead to a drop in world demand which could be amplified by knock-on effects between trade partners. These effects have been estimated using a world trade model: to give an example, a 10% drop in activity in the emerging Asian economies would cost France 0.4 percentage points in growth in the short term and up to 1.5 percentage points in the medium term. Among the Eurozone countries, Germany seems most at risk if there were to be an adverse economic shock in the emerging economies. In practice, the slowdown experienced by the emerging countries since the end of 2013 already appears to have affected activity in the advanced countries in 2014, costing France between 0.1 and 0.2 percentage points of growth. In addition, creditors in the developed countries, and the European banks in particular, keep a substantial proportion of their assets in the emerging countries in the form of portfolio investments, and are therefore exposed high potential losses. ■

Macroeconomic imbalance in the emerging countries: moderate risks for the advanced economies

Several emerging countries are showing major macroeconomic imbalances today

The 2000s was a period of prosperity for the emerging economies

During the 2000s, the emerging economies experienced robust growth

During the 2000s, economic growth in the emerging countries remained buoyant (*Graph 1*). Between 2000 and 2007, average growth in these countries reached +6.6% per year, after +3.7% between 1990 and 1999, a much higher pace than in the developed countries (+2.6% on average for the period 2000-2007). Following this, even though the 2008-2009 financial crisis caused a sharp slowdown in the emerging countries, their growth differential still remained strongly favourable (+5.4% per year on average between 2008 and 2013, compared with +0.7% in the developed economies). Thus the overall contribution of the emerging countries to the production of global wealth has increased considerably, due to a large extent to the dynamism of China: in 2013, the emerging economies accounted for half of global GDP in purchasing power parity, whereas their contribution was only 37% in 2000.

The 1990s were marked by several financial crises

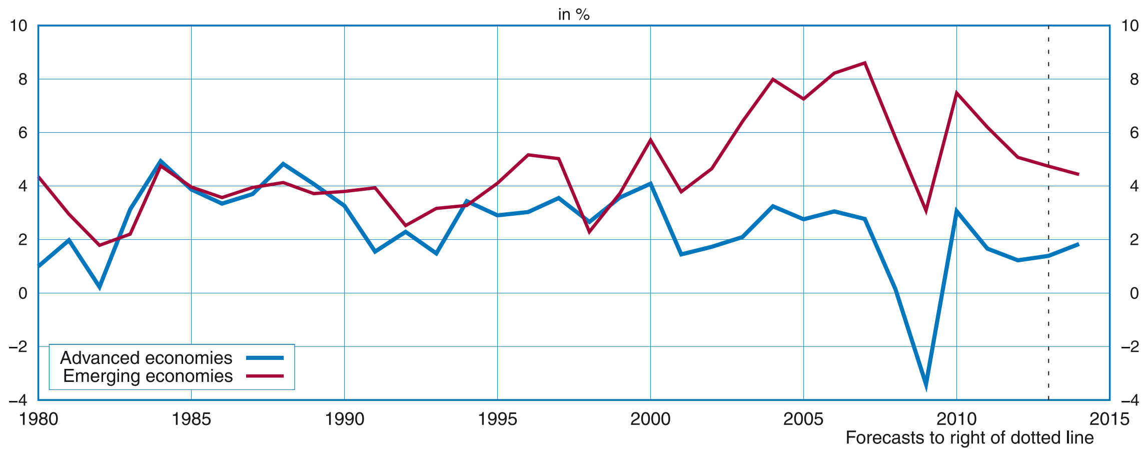
The origins of this catch-up trend can be traced back to a change in growth model for the emerging countries at the start of the 2000s, with a combination of external factors and improvements in the domestic macroeconomic fundamentals of these countries. In the 1990s, growth in the most dynamic of the emerging countries, especially the Asian Tigers (*Box 1*), had indeed been based on strong external imbalances, in particular a current account imbalance. The sudden correction of these imbalances gave rise to several crises, characterised by a sharp currency depreciation and a rebalancing of the current accounts at the cost of a strong contraction in domestic demand (*Box 2*).

This dynamism is mainly due to a favourable international environment

The period 2000-2007 was one of robust development in world trade. Driven by the growth in the advanced economies and the gradual liberalisation of trade, world trade grew at a steady rate (+6.8% per year on average according to the CPB[1]). Strong activity in the developed countries yielded sustained demand for the products of the emerging countries, while the internationalisation of production lines also worked in their favour. This configuration produced a

(1) The CPB (in *Dutch the Centraal Planbureau*) is an independent Dutch agency whose main objectives are the analysis of economic policies and forecasts; the institute produces world trade statistics which are authoritative figures in this sector.

1- Growth in real GDP in the advanced countries and the emerging countries



Source: IMF

growth model based on the dynamism of exports (*Graph 2*) and the weakness of domestic demand. As a result, current account transactions in the emerging countries were clearly in surplus from the beginning of the 2000s, whereas they had been in deficit in the 1990s (*Graph 3*). Lastly, many countries carried out structural reforms (partial deregulation of capital markets, establishment of independent central banks, etc.) which to a certain extent improved the convergence between domestic savings and financing requirements and restored the confidence of foreign investors.

The recent slowdown in the emerging countries has uncovered some major imbalances

Although at first the emerging countries resisted the financial crisis much better, it did bring out some vulnerabilities in several cases, especially Brazil, India, Indonesia, Turkey and South Africa.

The emerging countries drove the world recovery after the financial crisis

In 2008-2009, the financial crisis did not drag the majority of the emerging countries into a deep recession, unlike the developed countries. Nevertheless, it did give rise to a clear slowdown in these economies. On emerging from the crisis, however, recovery was vigorous, especially as a result of some strong stimulus packages that were put into place very quickly, whereas recovery remained weak in the advanced countries. The emerging countries therefore gave a decisive boost to global recovery. In China, for example, a stimulus plan of around 12% of GDP was set up from 2008. It sustained Chinese domestic demand but also the neighbouring economies.

Box 1- What are the emerging countries?

The term "emerging countries"covers a group of countries whose per capita GDP remains lower than that of the developed economies but is growing at a rate that suggests a degree of convergence of standards of living, both in economic and social terms, and of economic structure. Thus the emerging countries are the most advanced of the developing economies. The concept was originally devised in the 1980s to define markets with a high potential for return on investment, but no precise definition has ever been established.

In this report, the expression "emerging countries"is used in its very broadest sense, as applied by the IMF. This is based on two main criteria:

GDP per capita substantially lower than that of the advanced countries; nevertheless, the diversification of exports is also a criterion, so the oil-exporting countries, which have a high level of GDP per capita, are included in the emerging countries.

A fairly low level of integration into the global financial system.

This definition covers 153 of the 189 member countries of the International Monetary Fund (IMF). However, the analysis presented in this article covers for the most part the largest of these in terms of purchasing power parity GDP. Most of them are monitored by INSEE, with the exception of oil-exporting countries where their economy has its own dynamic associated with their natural resources. The main countries considered are China, India, Russia, Brazil, Mexico, Turkey, Indonesia, South Africa and Poland.

The situations of the emerging countries are highly varied, although in the course of their development some have had common characteristics in terms of economic dynamism, and the model of growth that underlies that dynamism. As a result, analysts have suggested grouping them together in order to clarify the different waves of expansion seen in the emerging countries and to see in which countries these have taken place. In the 1980s, the four "Asian Dragons"(Hong Kong, South Korea, Singapore and Taiwan) referred to the first emerging economies. Then in the 1990s, it was the turn of the "Asian Tigers"(Thailand, Malaysia, Indonesia, Vietnam, Philippines) to develop. After the collapse of the USSR, the former Soviet Republics in the emerging Europe were grouped under the heading of "CEE"(Central and Eastern European) countries. During the third major wave of development in emerging countries, in the 2000s, the acronym "BRICS"Brazil, Russia, India, China, South Africa) was coined to bring together those countries where economic and demographic dynamism were the driving force.

Since the major recession, other concepts have been introduced to define countries that are vulnerable in economic and financial terms. This is the case for the "Fragile Five" (India, Russia, Brazil, Indonesia, Turkey), to borrow the term coined by a Morgan Stanley analyst in 2013.■

Macroeconomic imbalance in the emerging countries: moderate risks for the advanced economies

Their good performance drew capital from the developed countries

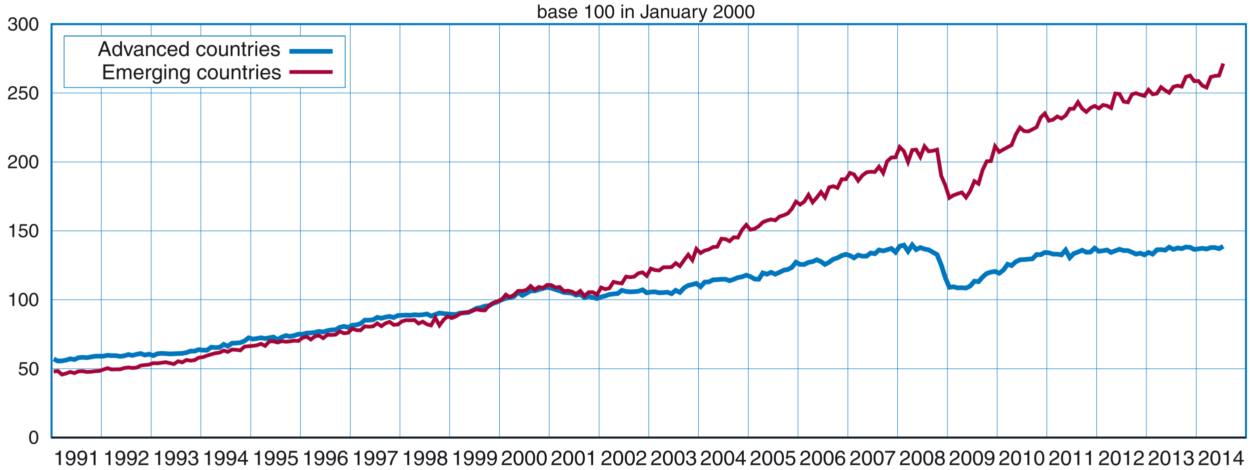
In addition, from 2008 the major advanced economies put in place expansionist monetary policies which increased global liquidity. Major flows of capital entered the emerging countries, attracted by better economic performances and sustainably higher interest rates, while growth prospects in the advanced countries were gloomy (Graph 4).

Economic performances in the emerging countries are weaker today

Since mid-2013, the situation seems to have turned around: while recovery in the advanced economies is becoming a little more vigorous, especially in the UK and the USA, the economic outlook in the emerging countries is deteriorating compared with their earlier dynamism. Indeed the slow pace of recovery in the developed countries is producing a foreign demand deficit which is proving harmful to the emerging countries. Over the period 2008-2013, world trade grew by only 2.5% per year on average, a rate that falls a long way short of the 2000-2007 period (+6.8%), according to data from the CPB.[2]

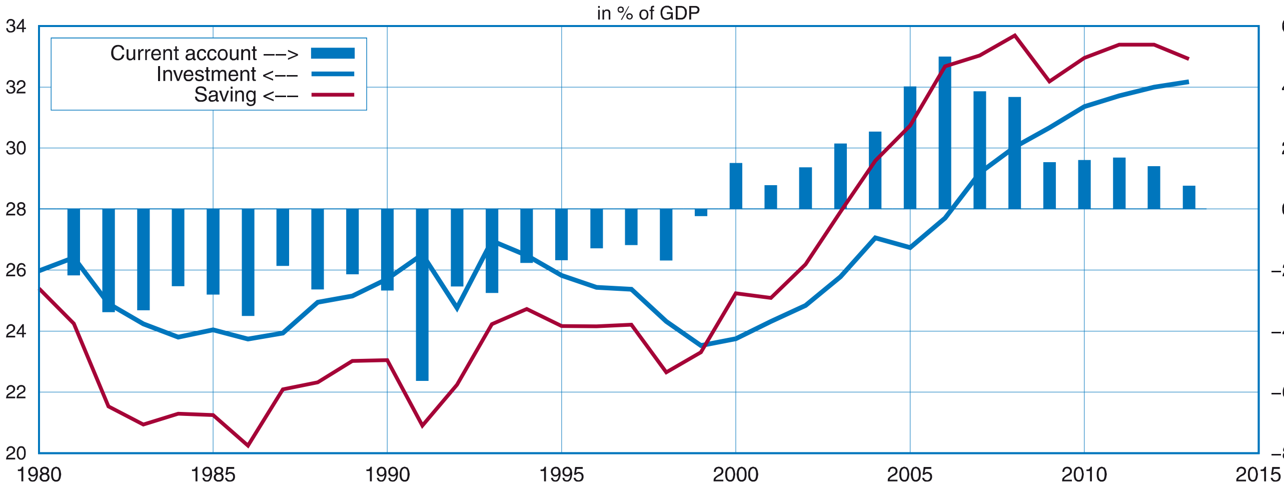
(2) The slowdown is in part structural, linked with the gradual decrease in the processing trade in the Chinese economy. The proportion of such processing was around 50% of imports at the end of the 2000s and is currently only 25% (*see report by D. Roucher, 2014*).

2 - Exports from the advanced countries and the emerging countries



Source: IMF

3 - Saving-investment imbalance in the emerging countries



Source: IMF

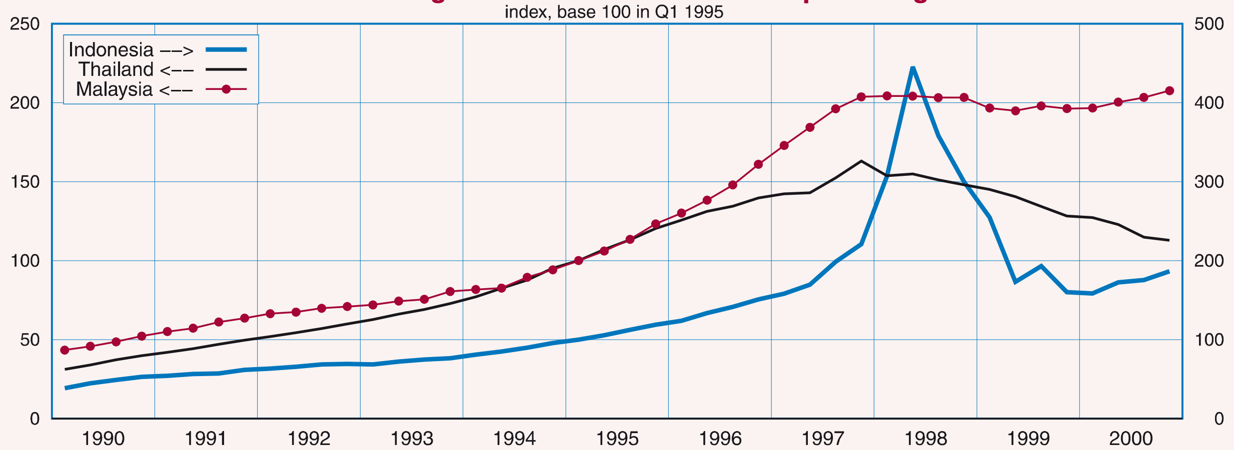
Box 2 - Balance of payments crises in the 1990s

In the 1990s, several of the emerging countries experienced episodes presenting similar features: a strong and sudden depreciation in the exchange rate, leading to a major drop in domestic demand. Two cases in particular are a good illustration of this: the Mexican peso crisis 1994-1995, and the Asian crisis 1997-1998. In both cases, the crisis emerged in the context of a marked current account imbalance, accompanied by a fixed exchange rate system and poor control over the mobility of capital. High growth in domestic demand, fuelled by an uncontrolled increase in debt (public debt in Mexico, private debt in the Asian Dragons), generated a deficit in savings in relation to investment. This deficit was maintained by foreign capital inflows, in the form of portfolio investments rather than direct investment. This situation of external imbalance left the country dependent on the expectations of foreign lenders: funding growth through external debt works as long as these creditors consider that the exchange rate anchor is sustainable. If these expectations suffer a reversal (there can be many different reasons for this, which is what makes a currency crisis so difficult to predict), lenders withdraw their capital, dragging the exchange rate down. The central bank then defends the exchange rate regime by selling its currency reserves until they are at such a low level that this is no longer possible. The currency then depreciates suddenly, which at first results in a severe contraction in domestic demand via soaring prices, increased unemployment, and a rise in external debt. Thereafter, the depreciation of the currency helps create an upturn in price competition and hence in the balance of trade, while the intervention of international lenders, the IMF in particular, may enable at least part of the country's external liabilities to be restructured to restore sustainability.

The Asian crisis of 1997-1998 demonstrated just such a configuration. This crisis began in July 1997 and resulted in Thailand and then several other emerging economies in South-East Asia abandoning their exchange rate pegged to the dollar. In the 1990s, growth in domestic demand was strong in these countries, fuelled by a very rapid development of credit in the private sector (especially to fund the real estate market, which was then booming, *see Graph 1*). Private savings were not sufficient to cover this domestic demand, which was financed in part by major current account deficits (*Graph 2*). The banks contracted short-term foreign currency loans, which they transformed into long-term national currency loans. International lenders therefore ran a serious risk of losing capital in the event of a currency devaluation. In summer 1997, worries over the solvency of the Thai banking system became reality, putting a sudden stop to all external financing. The foreign exchange reserves, which were woefully inadequate, could not prevent the destabilisation of the currency. On 2 July, Thailand floated the baht. Lenders' concerns then extended to neighbouring countries with similar macroeconomic characteristics, and there was a "flight to quality"outside the South-Asia area, causing the collapse of the Indonesian, Malaysian and Philippine currencies (*Graph 3*). ■

1 - Outstanding credit owed to non-financial private agents

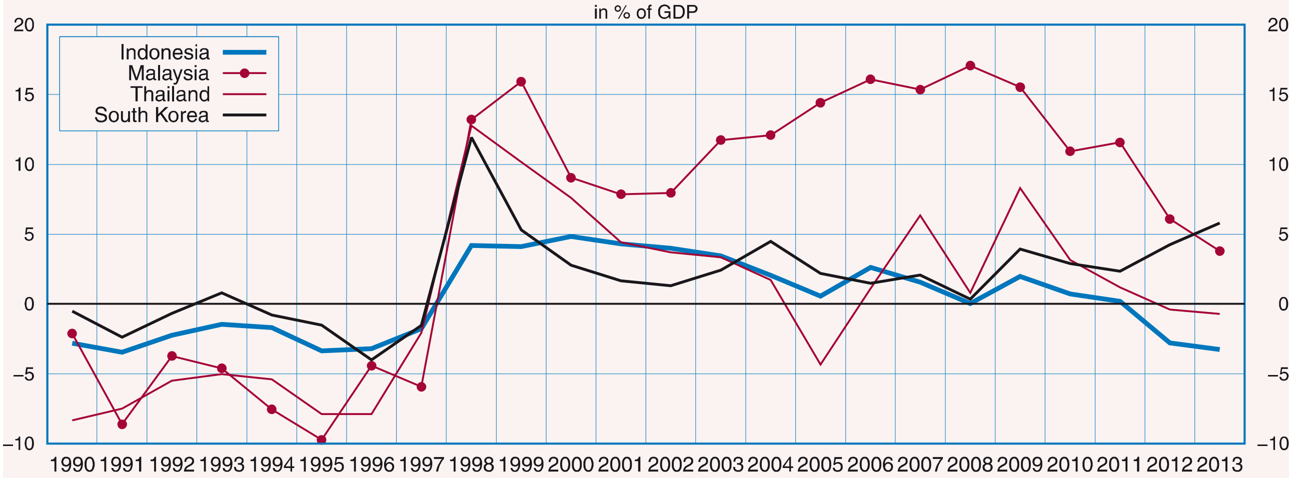
index, base 100 in Q1 1995



Source: Bank of International Settlements

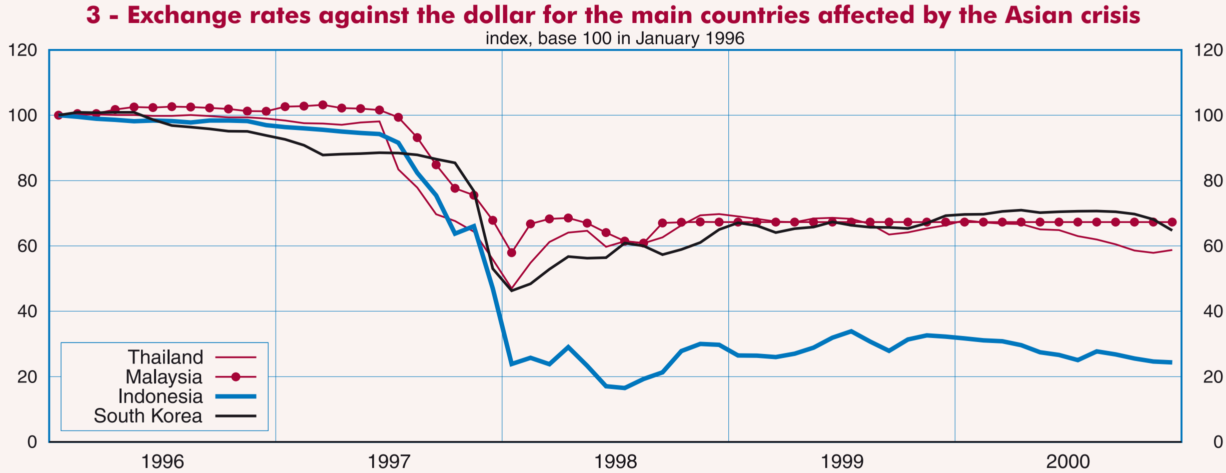
Macroeconomic imbalance in the emerging countries: moderate risks for the advanced economies

2 - Current account balances of the main countries affected by the Asian crisis



Source: IMF

3 - Exchange rates against the dollar for the main countries affected by the Asian crisis



Source: National central banks

Several major emerging economies have significant macroeconomic imbalances

This short-term slowdown is exacerbated by a number of external macroeconomic imbalances that worsened during the crisis. Today, some of the emerging countries demonstrate fundamental economic dynamics which are reminiscent to some extent of the balance of payments crises of the 1990s: in particular there are large deficits in their current accounts, fed partly by the dynamism of capital inflows resulting from the expansionist monetary policies of the advanced countries. Other risk factors associated with capital flight are compounded: large budget deficits, low growth and high inflation. Overall, the countries concerned today (especially India, Indonesia, Brazil, Turkey and South Africa) are not the same ones that experienced balance of payments crises in the 1990s (*Graph 5*). In addition, the very favourable conditions for external financing have triggered strong growth in private sector credit in several emerging countries, a reminder of what happened in the Asian countries in the 1990s. Thus in Brazil, China, Poland and Turkey, private sector credit grew more rapidly than nominal GDP over the period 2009-2012, which leaves the banking sectors of these countries highly exposed to the negative effects of a possibly adverse macroeconomic shock on the solvency of private agents.

Macroeconomic imbalance in the emerging countries: moderate risks for the advanced economies

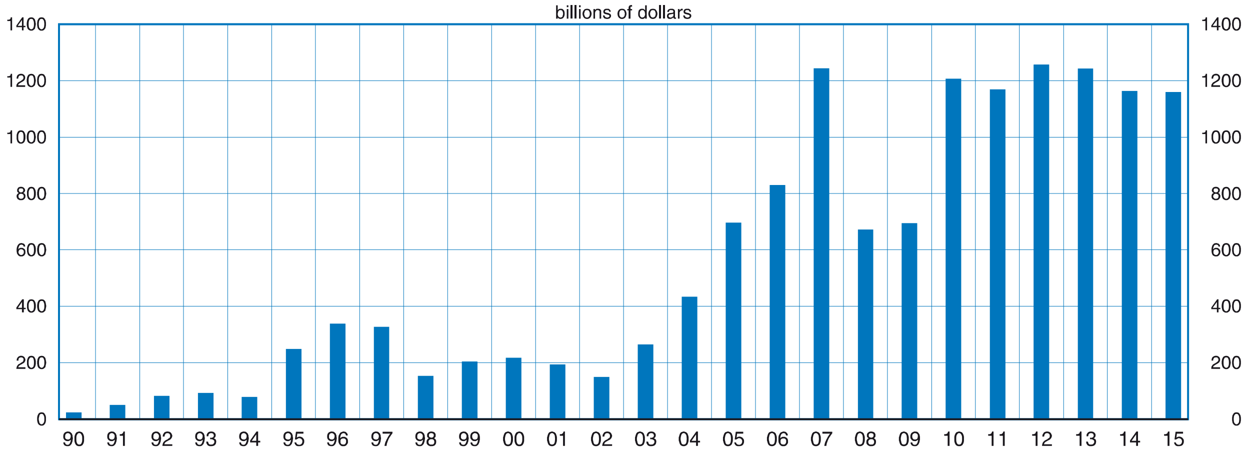
There have already been episodes of financial tension in 2013 and at the beginning of 2014

The exposure of several major emerging countries to external risks started to materialise from H2 2013, when the US Federal Reserve initiated a return to less expansionist monetary policy. The resulting increase in American long rates caused waves of capital outflows from several emerging countries, resulting in a stock market decline and instances of currency depreciation (Graph 6). The monetary authorities of these countries were forced to react. Several found themselves with a political dilemma on their hands which is still ongoing today: either the central bank defends the value of the currency by intervening on the foreign exchange market, which would cause the level of foreign exchange reserves to fall with no guarantee that the exchange rate would be stabilised in the long term; or it defends its currency by increasing the base rate, but with the risk of depressing domestic demand. In 2013, most emerging countries chose the second option: via the increase in the cost of borrowing that it brought about, the result of this choice was a marked slowdown in the economies concerned, especially Brazil, Turkey and India.

The risk of crisis in these countries has however been reduced by the reforms and practices of the 2000s

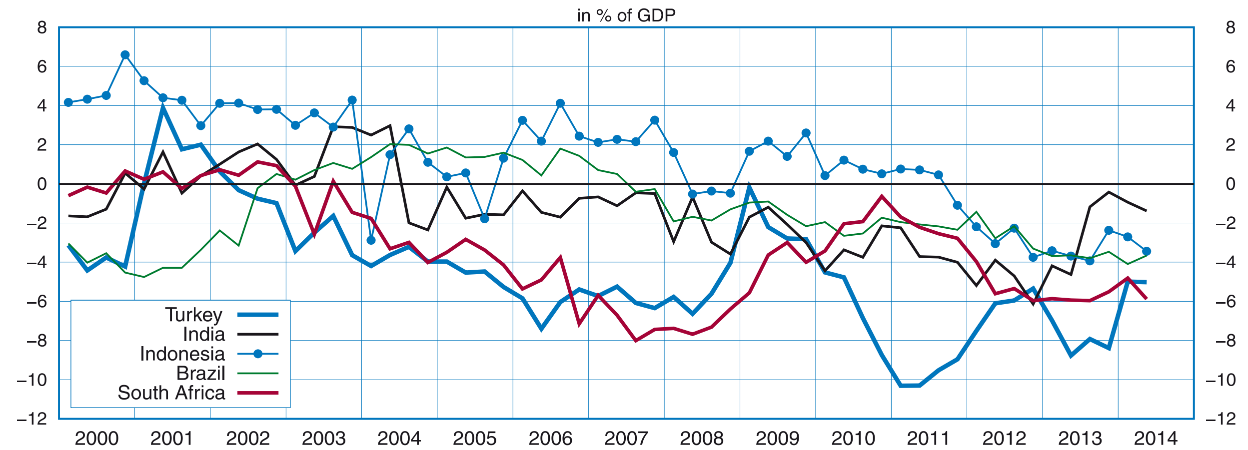
Despite these risk factors, most of the countries concerned are today better equipped to cope with a possible balance of payments crisis than they were on the eve of the 1997-1998 crises. First, these countries now no longer peg their currency firmly to the dollar, but allow it a little more flexibility by leaving the rate to float ("managed floating exchange rate"). This lessens the risk of a speculative

4 - Capital inflow into the emerging countries



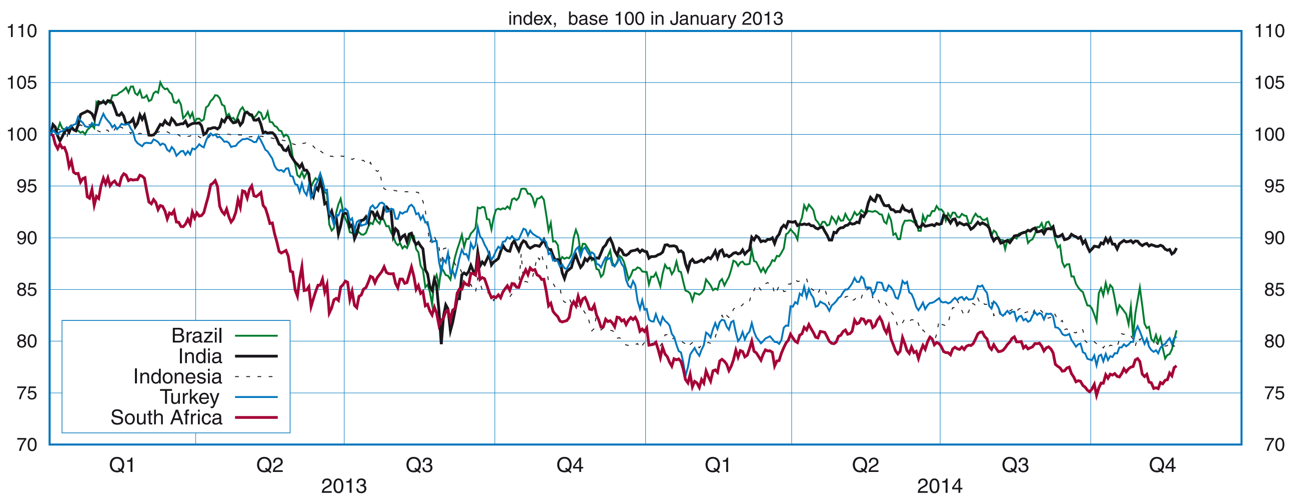
Source: Institute for International Finance

5 - Current account of several large emerging countries



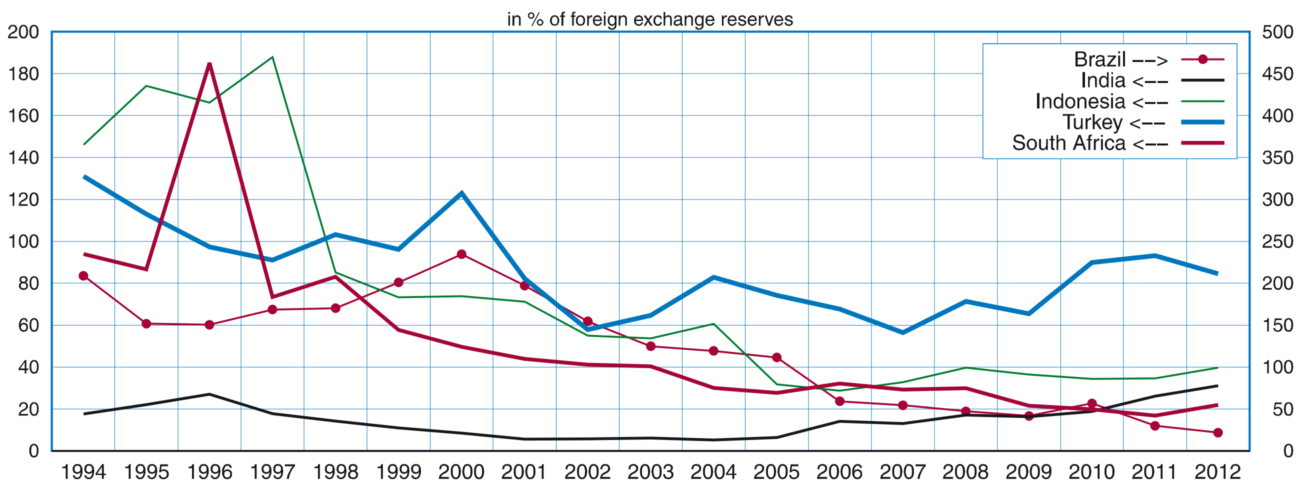
Sources: National statistical instituts, National central banks attack on the foreign exchange market. In addition, the foreign exchange reserves accumulated by the emerging countries are much more substantial than in the 1990s, and thus, if necessary, the monetary authorities would be able to cope if external finance were to dry up. Lastly, the foreign debt of most of these countries has fallen considerably since the 1990s, and its current structure is sounder in terms of composition and maturity. Today the financial assets of the emerging countries are made up of more foreign direct investment and less portfolio investment, so that the risk of capital flight appears lower. Similarly, the maturity of the foreign debt of emerging countries has been lengthened, which reduces the imbalance between the maturities of liabilities and assets. In most countries, this combination of factors has brought down the share of short-term external debt not covered by foreign exchange reserves (*Graph 7*).

6 - Exchange rate of several large emerging countries against the US dollar



Source: National central banks

7 - Short-term debt of several large emerging countries



Source: World bank

Macroeconomic imbalance in the emerging countries: moderate risks for the advanced economies

Moderate though real risks for the developed countries

A sudden downturn in some of the larger emerging countries is less probable than in the 1990s. However, if this were to happen, its effects on activity in the developed countries would be worse. The concentration of trade and financial links between countries of the North and South in the course of the 2000s strengthened interdependence between these two groups of countries.

An activity shock in the emerging economies would have a substantial impact on the developed countries

Trade links between advanced and emerging countries have increased

The huge growth in world trade since the beginning of the 2000s is in part a reflection of the densification of trade in goods between the developed countries and the emerging countries. In 2013, emerging countries represented 35% of exports from the developed countries, compared with less than 20% in 1990. However, the developed countries are not all exposed to the emerging risk equally, as the geographical structure of trade varies substantially from one country to another (*Table 1*). Some emerging zones play an important role in the trade of their advanced partners. In 2013, emerging Asia accounted for 20% of exports from the Eurozone, 25% of exports from North America and 51% of Japanese exports. The Central and Eastern European Countries represent 17% of Eurozone exports, while more than 30% of North American exports are destined for Latin America.

And trade links between developed countries remain strong

Any effects generated by an economic shock in the emerging countries could be amplified because of their interdependence with the developed countries. For example, an adverse shock in Latin America is likely to lead to a drop in demand for American products. Activity there will thus be affected, which will generate a drop in the demand for exports from the United States to the rest of the world. As a result the Eurozone, which sends 15% of its exports to the United States, will in turn be affected, more strongly than simply by a direct effect (indeed, Latin America receives only 6% of the Eurozone's exports).

A model for world trade to quantify the importance of these links

To quantify the importance of these trade links, and hence the cost that the developed countries would have to bear in the case of an adverse shock in the emerging countries, a model of world trade has been developed. It features the main trade links between most countries in the world and their partners, so that any contraction in activity spreads out to the different partners via the trade channel (*Appendix*).

Table1

Structure of world trade

Percentage of exports from the different areas (in rows) to the areas in columns

	Africa	Latin America	Asia (excluding Japon)	Eurozone	CEEC	Europe (excluding CEEC and Eurozone)	Middle East	Oceania	United States and Canada	Japan	**Total**
Africa		2.7	21.6	40.3	0.8	13.4	5.6	1	10.6	4	100
Latin America	1.7		19.7	13.3	0.9	3.1	1.7	0.5	56	3.2	100
Asia (excluding Japan)	4	8.5		26.3	5.8	6.2	5.9	4.3	25.8	13.2	100
Eurozone	4.5	5.5	20.3		16.9	27.2	6.7	1.7	14.7	2.6	100
CEEC	1.8	1.2	16.5	61.3		10.9	4.4	0.3	3	0.5	100
Europe (excluding CEEC and Eurozone)	1.7	2.8	13.6	55.5	4.7		3.7	1.5	14.3	2.1	100
Middle East	6.8	2.9	28.4	29.8	7	9.2		0.8	13.2	2	100
Oceania	1.2	1.1	67.6	4.2	0.2	2.8	1.9		5.7	15.2	100
United States and Canada	1.8	31.9	25.5	18	1.1	8.6	4.3	2.6		6.3	100
Japan	1.1	5.5	51.2	9	0.9	2.9	2.4	3.2	23.8		100

Sources: UN Comtrade & UN Service Trade

How to read this chart: intra-zone trade has been neutralised; CEEC means Central and Eastern European Countries (including Russia), USA United States.

Macroeconomic imbalance in the emerging countries: moderate risks for the advanced economies

The Eurozone is more exposed to a trade shock in Asia and Central and Eastern Europe, and the United States to a shock in Latin America

When taking into account all the links between all economies, the Eurozone would apparently be relatively vulnerable if there were an economic shock in emerging Asia. In the short term, Germany and France would be the most at risk, with a drop in their respective GDPs of 0.7% and 0.4% should there be a sudden adverse shock of 10% in activity in this area (*Table 2*). In the medium term, taking into account indirect effects transiting through other countries ("echo" effects), this decrease could be as much as 2.3% and 1.5% of GDP respectively. By virtue of its geographic location, Japan would experience the greatest drop in activity (-3.4%). A shock in the Central and Eastern European countries would also have a substantial effect on certain advanced economies. Germany would be the most at risk (-1.0% in the short term; -2.1% in the medium term): indeed a major share of its exports goes to Eastern European countries, with which historically it has strong commercial links. For all the other European countries, the effect would be much more moderate. A shock in Latin America, on the other hand, would have only a moderate effect on Europe, but would be felt more strongly in the United States where it could be around -0.7% in the short term and -1.0% in the medium term. The relatively weak effect of a shock in Latin America compared with a shock in the other two emerging areas studied shows that this area plays a smaller role in global trade links.

The slowdown in emerging countries since the end of 2013 has impacted growth slightly in the developed countries in 2014

Using the model it is also possible to quantify the effects of the slowdown in the emerging countries since the end of 2013 on the other economies in 2014. To do this, it is first necessary to determine the scale of the exogenous shock that is specific to the emerging countries, a standard exercise. A first approximation of this shock can be made by the differential in the slowdown in activity from 2012 to 2014 between the emerging countries on the one hand and the developed countries on the other. The strong underlying hypothesis is that in the absence of a slowdown specific to the emerging countries, the difference between their growth and that of the more advanced countries in 2014 would be the same as in 2012.

The calculation is made for the nine main emerging countries in the model with the IMF forecasts for annual growth for 2014, dated October 2014. This calculation gives an average economic shock of 1.0% of the activity of these countries, with some disparities: considerably stronger for Russia, Mexico, Indonesia and South Africa, close to the average for China and Brazil, and less or non-existent for India, Turkey and Poland.

Table 2
Effect of a negative shock of 10% of GDP in the different emerging areas on the developed countries

	Emerging Asia		Latin America		CEEC	
	Direct effect	Total effect	Direct effect	Total effect	Direct effect t	Total effect
Germany	-0.7	-2.2	-0.2	-0.8	-1.0	-2.1
France	-0.4	-1.5	-0.1	-0.5	-0.3	-1.0
Spain	-0.2	-1.2	-0.4	-0.8	-0.3	-1.1
Italy	-0.3	-1.4	-0.2	-0.6	-0.7	-1.5
United Kingdown	-0.3	-1.4	-0.1	-0.5	-0.2	-0.8
United States	-0.4	-1.2	-0.7	-1.0	0.0	-0.3
Japan	-1.8	-3.2	-0.2	-0.6	-0.1	-0.5

How to read this chart: the direct effect is a bilateral effect between the area where the shock occurs (columns) and the country affected (rows); the total effect takes into account echo effects *via* all other trading partners of the country concerned: in the event of a shock of -10% on the GDP of emerging Asia, the direct effect on the GDP of Japan would be -1.8% and the total effect -3.4%; CEEC means Central and Eastern European Countries (including Russia).

As before, these figures are then introduced into the world trade model, to study the impact on the GDP of the developed countries (*Table 3*).

In 2014, the slowdown in the emerging countries appears to have had a slight effect on growth in the developed countries. In particular, when "echoes"are also taken into account, it could have cost Germany up to 0.4 percentage points in growth, and France 0.2 points. As activity slowed sharply in Mexico, the effect on the United States would also probably be substantial, at around 0.2 percentage growth points.

These results should nevertheless be interpreted with care

These results are not to be considered an immediate contribution to growth in the quarter under consideration, but they give an idea of the scale of the global slowdown in growth, which may be spread over several quarters. As the recovery starts to spread through foreign trade, this process, although fast, is not immediate, especially as businesses first tend to adjust their inventory. In addition, these are *ceteris paribus* calculations. As a consequence, many other mechanisms at work are disregarded. One such neglected effect, which is potentially important, is the effect of the exchange rate: if an adverse shock happens in an emerging area, the national currencies of the countries concerned will tend to fall, which would raise the effective exchange rate in the developed countries and thus penalise their exports. This amplifying effect is to be added to the simple fall in global demand. Next, we assume an unchanged structure of world trade: the weighting of the different destinations to which a given country exports remains the same. This is a reasonable hypothesis in the short term, but less so in the medium and long term, as it weakens the "echo" effects. Lastly, the model does not take into account the different countries' reactions in terms of fiscal or monetary policy.

The risk of transmission via the banking channel remains moderate

European banks are more exposed than American banks to emerging country risks

Although transmission of an economic shock via the trade channel is likely to remain limited, there are other links between the advanced and emerging economies, especially financial ones. On the one hand, the advanced economies make sizeable direct investments in the emerging countries; on the other hand, private agents in the developed countries, especially banks, hold substantial securities issued by counterparts in the emerging countries in the form of portfolio investments.

European banks hold large amounts of securities issued by counterparties (public and private) located in the emerging countries. According to data published by the Bank for International Settlements, European banks held $3,280 billion in assets in the emerging countries in Q2 2014, or around 13% of the consolidated

Table 3
Slowdown already observed in the emerging countries as it affects the developed countries

	Slowdown in 2014	
	Direct effect	Total effect
Germany	-0.1	-0.4
France	-0.1	-0.2
Spain	-0.1	-0.2
Italy	-0.1	-0.3
United Kingdown	-0.1	-0.2
United States	-0.1	-0.2
Japan	-0.1	-0.3

European financial sector. In value, this is four times more than American banks. In addition, the degree of exposure to the different emerging areas varies among the developed countries. This would increase the vulnerability of some countries if a very localised shock were experienced (*Table 4*). Spanish banks, for instance, would be particularly exposed if there were a shock in Latin America, whereas British banks would be in the front line if there were a shock in Asia. French and German banks, on the other hand, have no major imbalance in their portfolios of emerging securities towards any particular geographic area. The high level of exposure of European banks to risks from the emerging countries should nevertheless be put into perspective: from an assessment of the quality of the balance sheets of banks in the Eurozone and tests carried out by the European Central Bank in 2014, results were satisfactory overall in measuring the degree of resilience of the financial system to episodes of severe crisis (*see Focus in the Financial Markets sheet*).

A sudden shock in the emerging countries is less likely today than in the 1990s, but it would be more painful for the developed countries

Even though activity in the emerging countries has slowed considerably since 2013, highlighting external weaknesses in some, a balance of payments crisis along the lines of those observed in the 1990s seems less likely. Most of the emerging countries have learned lessons from earlier crises and have carried out extensive reforms of their banking systems, controlled and rationalised their foreign debt, increased their foreign exchange reserves and modernised their central banks. However, while all the fundamentals are better today, some countries are nevertheless giving cause for concern (e.g. Brazil, India, Indonesia, South Africa or Turkey) and could be destabilised if foreign financing were to dry up, for example as the Federal Reserve gradually exits an expansionist monetary.

However, although it may be less likely, an economic shock in the emerging countries would be no less damaging to the developed countries: the high level of integration of trade relations at global level in the 2000s would result in trade effects that would have a greater impact. In addition, European banks hold significant assets in the emerging countries, making them vulnerable to a sudden loss in value. ■

Table 4

Exposure of banks in the developed countries to risk from the emerging countries

billions of dollars

	France	Germany	Italy	Spains	United Kingdown	États-Unis
Africa and Middle East	120	31	9	3	208	59
Asia and Océania	157	119	14	11	553	354
PECO	193	118	199	66	67	102
Latin America	40	21	3	508	137	247

How to read this chart: French banks have assets of $120 billion in securities issued by counterparties located in Africa or the Middle East.

Source: Bank for International Settlements

Appendix - Estimation of a world trade model

This appendix describes the working of the world trade model used to quantify the impacts of economic shocks via the trade channel.

Let us consider country i. Its resources-uses accounting balance is written:

$$Y_i = D_i + X_i - M_i$$

where Y_i is the GDP of this country, D_i is domestic demand, X_i is exports and M_i imports. Exports for this country can be written according to the imports of its partners and its share of foreign markets:

$$Xi = \sum_{j \neq i} \lambda_{ij} M_j \text{ avec } \lambda_{ij} = \frac{X_{i \to j}}{M_j}$$

with where λ_{ij} is the share of exports from country i in the imports of country j.

Let us assume that in all the countries i, imports react to variations in GDP with elasticity σ :

$$dM_i = \frac{M_i}{Y_i} \sigma_i . dY_i$$

In addition, we denote as c_i the sensitivity of domestic demand to GDP:

$$dD_i = c_i . dY_i$$

The differentiated resources-uses balance can then be rewritten:

$$dY_i = dD_i + dX_i - dM_i = c_i dY_i - \sigma i \frac{M_i}{Y_i} dY_i + dX_i$$

In addition, if we assume that the structure of world trade is fixed in the short term, we can then write:

$$dXi = \sum_{j \neq i} \lambda_{ij} dM_j = \sum_{j \neq i} \lambda_{ij} \frac{M_j}{Y_j} \sigma_j . dY_j$$

Thus finally:

$$dY_i = \frac{1}{1 - c_i + \sigma_i \frac{M_i}{Y_i}} \sum_{j \neq i} \lambda_{ij} \frac{M_j}{Y_j} \sigma_j . dY_j \qquad (1)$$

Direct effect and total effect

Let us imagine a shock on the activity of a country j. In the first round, its impact on country i is:

$$dY_i = \frac{1}{1 - c_i + \sigma_i \frac{M_i}{Y_i}} \lambda_{ij} \frac{M_j}{Y_j} \sigma_j . dY_j$$

Therefore the initial shock breaks down into 3 effects:

- the impact resulting only from a variation in exports - a Keynesian multiplier effect due to the sensitivity of domestic demand to GDP

- a dampening effect to avoid the shock with imports (in the case of negative shock in country j, part of this shock will result in a fall in imports by country i and not in a fall in domestic activity) The sum of these 3 impacts gives the direct effect of the shock. By definition, it is null in the country where the shock occurs.

Total effect

Once the initial impact has passed, the shock can be amplified by the fact that the other trading partners of country j have undergone the same thing: these are knock-on effects. We can therefore write:

$$dY_i = dY_{i,direct} + \frac{1}{1 - c_i + \sigma_i \frac{M_i}{Y_i}} \sum_{j \neq i} \lambda_{ij} \frac{M_j}{Y_j} \sigma_j . dY_{j,direct}$$

The series of shocks that this produces converges towards equation (1), which is used to estimate the total effect.

Writing the matrix

Matrix-wise, equation (1) can be rewritten:

$$dY = (I + A - C)^{-1} . \Lambda . A . dY$$

where dY is the vector of shocks, I is the identity matrix, C is the diagonal matrix of term ci, is the matrix of market shares λ_{ij} , and A is the diagonal matrix of term $\sigma_i \frac{M_i}{Y_i}$

The solution to the problem with total effects is then written:

$$dY = [I - (I + A - C) . \Lambda . A]^{-1}$$

Setting the parameters

In theory, the values of ci and σ_i differ for each country. However, because of the large number of countries in the model, it is not possible to estimate these parameters for each one. Conventionally, we therefore set $c_i = 0.6$ and $\sigma_i = 2$.

Data sources

Trade flows between countries are estimated from the *UN Comtrade and UN Service Trade databases* for 2012, for a total of 118 countries. GDP data are taken from the IMF World Economic Outlook database.■

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