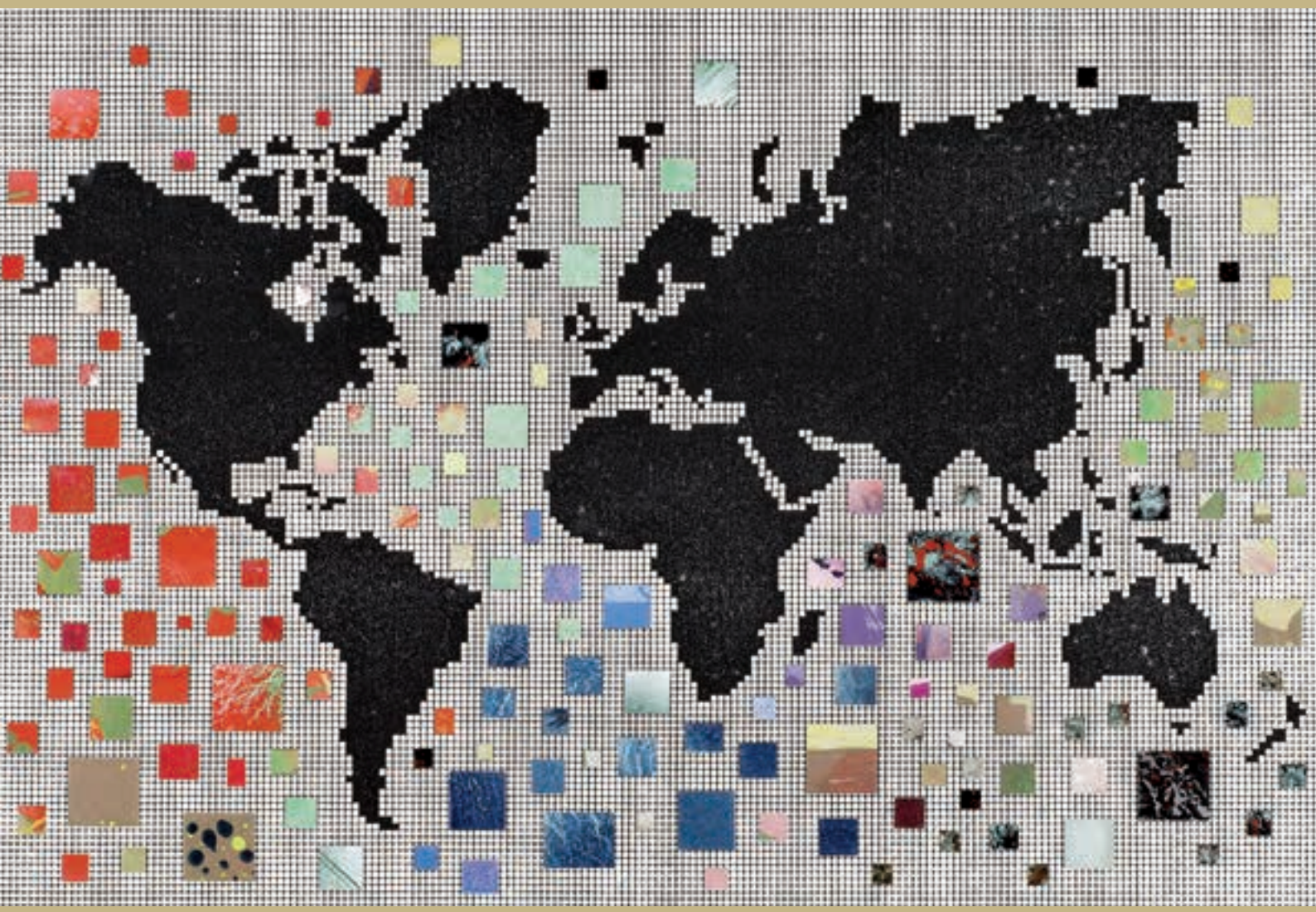
WORLD TRADE ORGANIZATION

World Trade Report 2013

Factors shaping the future of world trade



What is the World Trade Report?

The World Trade Report is an annual publication that aims to deepen understanding about trends in trade, trade policy issues and the multilateral trading system.

Using this report

The 2013 World Trade Report is split into two main parts. The first is a brief summary of the trade situation in 2012. The second part focuses on the factors that will influence world trade in the years to come.

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Disclaimer

Foreword by the WTO Director-General

This year's *World Trade Report* looks at how trade and other forces of change are affecting our world. It combines contemporary analysis with conjecture about the future. The approach is eclectic, reflecting many different forces at work. The intermingling of these drivers of change is multidirectional and complex, and the pace of change is rapid.

The transformation of trade has been underway for some time. It is manifested most clearly in wider geographical participation in trade and the rise of international supply chain production. The first of these developments reflects the dynamism of emerging economies. The second is a vivid part of the recent story of globalization. Technology has been the great enabler of globalization, but globalization is a human construct and is therefore neither inevitable nor irreversible. The forecasts and reflections contained in this report do not foresee a reverse of globalization. But we should remember that the gains it brings could be nullified or at least mitigated if short-term pressures are allowed to override long-term interests, and if its social consequences in terms of the unevenness of its benefits are neglected.

In addition to trade itself – both as a consequence and cause of change – the report identifies a range of economic, political and social factors that together will be fundamental in shaping the future. These include technology, investment, energy and other natural resources, transport, demographics, institutions, socio-economic factors and the environment. The numerical projections presented in the report take a number of these factors into account, but it must be stressed that estimates carrying us decades into the future are very sensitive to changes in assumptions. They are therefore better thought of as comparative scenarios upon which to reflect rather than numerical predictions. One element clearly stands out in the report, and that is the importance of trade for development.

Technology has not just provided the wherewithal to make globalization possible in a physical and virtual sense, but it is also the key source of increased productivity associated with innovation and growth. Likely developments in respect of many of the sectors and issues mentioned above depend crucially on what happens on the technology front. The sources of new technology will shift increasingly towards emerging economies. New technologies and innovation will emerge with greater vigour from the services sector. Technology could also change much of what we take for granted today in terms of production and consumption patterns. New technologies in the field of information and developments in 3D printing and robotics will have a far-reaching impact.

Investment is a major component of international economic linkages. The rise of supply chains has made this even more apparent, since we can no longer treat foreign direct investment (FDI) as an alternative to trade for accessing domestic markets. Much FDI today is related to trade flows that link imports and exports in production along supply chains. Investment is also an important transmission mechanism for spreading technology, knowledge and innovation.

What happens in energy and primary product markets is also central to our future. Technology, again, will be important here. Even with new energy sources coming on stream, demand for energy, like for many other primary commodities, is likely to lead to higher prices. Water scarcity is going to be a significant challenge in some parts of the world. A failure to manage the uneven distribution of natural resources across the globe, the intrinsic scarcity of some of those resources, and the sustainable use of others will exact a heavy price on society.

Demography is another major shaping factor for the future, with some countries being well placed in terms of the demographic transition, while others will have to contend with ageing populations and a shrinking workforce. Migration, urbanization and a growing number of women in the workforce will all play an influential role.

Developments in the transport sector will affect the prospects for merchandise trade. Many factors will influence directions here, not least the policy stance of governments in relation to such matters as trade facilitation, competition and the environment. The extent of new infrastructural investment and innovation and trends in fuel costs will also play a part.

Institutions have always been a fundamental determinant of the human condition. This applies to political institutions that underpin systems of government, economic institutions that determine the functioning and regulation of national and international markets, and cultural values that forge social norms. Links between systems of government and trade are not straightforward. Political borders inhibit exchange but also define the parameters under which globalization can flourish. Strong economic institutions support international integration. At the same time, contrasting social norms may limit integration, but long-term commercial relationships and international cooperation can create mutual benefits that mitigate these constraints.

Strong economic and socio-political pressures have arisen in recent years as a result of widening income gaps at the national level and growing joblessness in many economies. These pressures are likely to grow

and will require focused policy attention if they are not to become disruptive on a wider scale. Policies that can be defended as promoting aggregate welfare will need to be seen as supporting jobs and new opportunities in order to secure political legitimacy.

Technology and trade are both recognized as disruptive forces in terms of income distribution. It is trade that faces the strongest political opposition even if in reality it is a lesser force for change than technology. In either case, long-term policies for education and training, and short-term policies to manage these transitions are indispensable to future growth, stability and social harmony.

A further public policy challenge that will surely grow in magnitude is how to manage the environment. Population growth and rising incomes in large parts of the world will place further stress on the environment, especially in relation to the global commons. A major effort in international cooperation will be required to build a path to sustainable development. Trade is not the sole key to address this complex issue, but it can certainly play its part. Technology will once again play a crucial role, but a formidable socio-political challenge faces the international community in striking agreement on respective national responsibilities for remedial action on such matters as controlling climate change. Whether what we do is sufficient to secure the future of coming generations will be a great test of our ability to bring about coherent collective action.

Painting the prospects for our future on such a broad canvas is useful in providing perspective on trade and where it fits in the broader world. It is a reminder that we do not espouse trade for its own sake, but for its potential contribution to our future. As I have already noted, trade bears a complex two-way relationship with many of the other determinants of that future. It is our responsibility to nurture trade and create the conditions under which it can make its rightful contribution. With a stalled Doha Round and the uncertainty this creates, we have arguably not been doing as much as we might in this regard.

There is much to fight for. Trade has played a remarkable role on different fronts over the last decades as part of a virtuous circle of growth and development, a harbinger of opportunities unimaginable not so many decades ago, and as an agent of greater social harmony. The rise of international supply chains has deepened and broadened opportunities arising from international exchange. When we think about trade in an economically more rational way – that is, in terms not just of flows of goods and services but rather in terms of the contribution of different nations in joined up production relationships – we begin to appreciate the true nature of the common interests that join us together.

Policy-dependent constructs such as the WTO are not self-sustaining. This is why renewed efforts are needed to revive the vibrancy of the global trading system. To do this, the WTO must address traditional issues of long-standing vintage such as tariffs, non-tariff measures, services and agriculture. At the same time, in our increasingly integrated world, other policy issues require attention, including investment, competition, subsidies and the management of public policy in trade-friendly ways. The premium on avoiding incoherence and fragmentation in policy design and management will grow.

The WTO must search for constructive compromise on fundamental issues relating to the balance of rights and obligations among its diverse membership, especially in a world of shifting influence and power among nations. Better accommodation is needed between preferential trade agreements and the multilateral trading system. Convergence in non-tariff measures, such as standards and norms, which will be crucial in levelling the playing field in the future, is not the primary responsibility of the WTO. But the WTO should be in a position to promote more convergence. Questions internal to the design and governance of the WTO also matter. One of these is how to preserve the advantages of non-discriminatory trade arrangements within the system. Another is how to define a role for the Secretariat that can be more supportive of forward movement without challenging the primacy of the membership in deciding outcomes.

This is not an exhaustive menu of challenges facing those responsible for sustaining the contribution of trade and economic cooperation more generally to our future. Some of the challenges identified in this report have also been addressed in the report by the Stakeholder Panel which I convened in 2012 to examine the future of world trade. On a more personal note, this is the eighth and final *World Trade Report* produced under my tenure. I would like to thank the Secretariat staff whose strong intellectual leadership has allowed these publications to become world references on research on trade matters. I should also like to take this opportunity to extend my best wishes to those who will now assume responsibility for leading and guiding this institution, and particularly to my successor, Ambassador Roberto Carvalho de Azevêdo.

Pascal Lamy
Director-General

Executive summary

A. Introduction

The *World Trade Report* 2013 examines likely trends in world trade and how current and future economic, social and political factors might weigh on these trends. Relationships are not uni-directional, with trade being both the cause and effect of certain developments.

The Report starts with an overview of past, present and future economic activity and trade, highlighting chronological milestones, trends and possible scenarios. It stresses in particular the importance of technology and politics in this narrative. Trade has been transformed in recent years through wider and more disperse geographical participation, changes in the composition of trade, and the rise of international supply chains. Simulations of possible future scenarios see a reinforcement of some of these trends but emphasize the sensitivity of outcomes to assumptions about key economic factors and policy developments (see Section B).

Fundamental forces shaping the future of international trade include demography, investment, technology, the disposition and availability of energy and other natural resources, transportation costs and institutions (see Section C). While much economic literature focuses on these factors, broader socio-economic factors are also key. These include social, environmental and macroeconomic concerns that are high on the political agenda (see Section D). All these economic, social and political factors will shape policy and in turn will be affected by policy. A particular concern of this report is the effect that likely trends will have on the multilateral trading system and the challenges it faces as well as ways that the multilateral trading system could influence outcomes (see Section E). Section F concludes by summarizing key factors to watch.

B. Trends in international trade

The evolution of international trade: insights from economic history

Globalization is neither inevitable nor irreversible. Technology – especially transport and communications – has been the main driver of global economic integration over the past 200 years. But political forces have also played a powerful role, sometimes helping to manage and cushion integrationist pressures, and at other times resisting or even reversing them.

Most of the 19th century and the early years of the 20th century produced the first great globalization. The years between 1914 and 1945, however, stand out as a period of dramatic "de-globalization". The combined shocks of the First World War, the Great Depression and the Second World War saw countries pull back from global integration and turn to more nationally focused and state-directed economic models. The world economy became more fragmented and international trade declined over this period.

These trends were reversed after 1945 as the world economy progressively "re-globalized" following the devastation of war and depression. A novel difference in the second age of globalization was the creation of international institutions – the United Nations, the International Monetary Fund (IMF), the World Bank, the General Agreement on Tariffs and Trade (GATT – later the WTO). These institutions were to keep the peace and curtail the economic nationalism and beggar-thy-neighbour policies that had done so much to destroy international stability in the first half of the 20th century. Globalization is unlikely to thrive in the absence of effective international political cooperation.

Trends in international trade: what has changed in the last 20-30 years?

International trade has grown tremendously in the last 30 years, much faster than global output.

Measured in gross terms, the dollar value of world merchandise trade increased by more than 7 per cent per year on average between 1980 and 2011, reaching a peak of US$ 18 trillion at the end of that period. Trade in commercial services grew even faster, at roughly 8 per cent per year on average, amounting to some US$ 4 trillion in 2011. Real merchandise trade growth (i.e. trade growth accounting for changes in prices and exchange rates) was equally impressive, recording a four-fold increase in volume between 1980 and 2011. Since 1980, world trade has grown on average nearly twice as fast as world production. Reductions in tariffs and other barriers to trade during this period contributed to the expansion.

New players have risen to prominence in world trade, most notably large developing countries and rapidly industrializing Asian economies.

Developing economies only accounted for 34 per cent of world exports in 1980 but by 2011 their share had risen to 47 per cent, or nearly half of the total. At the same time, the share of developed economies dropped from 66 per cent to 53 per cent. Surging exports from China boosted its share in world exports from 1 per cent in 1980 to 11 per cent in 2011, making China the world's largest exporter when members of the European Union are counted separately. Meanwhile,

the United States, Japan and the European Union as a whole all recorded declining shares in world exports. A similar picture emerges on the import side.

As developing economies have raised their collective share in world trade, they have increasingly done so by trading with each other. As evidence of this, we note that the share of "South-South" trade in world trade rose from 8 per cent in 1990 to 24 per cent in 2011. The share of North-South trade also increased slightly, from 33 per cent to 38 per cent over this interval, but trade among developed economies (i.e. North-North trade) saw its share slide from 56 per cent to just 36 per cent.

Countries have become less specialized over time in terms of their exports.

Improvements in transport, telecommunications and information technology, together with increased economic integration and greater trade openness, have resulted in higher levels of technological diffusion and increased mobility and accumulation of productive factors over time. As a result, countries have become less specialized in the export of particular products, and therefore more similar in terms of their export composition. Comparative advantage, or international differences in relative efficiencies among products, has become weaker over time in many countries, just as comparative advantage has shifted geographically.

Trade has tended to become more regionalized since 1990, particularly in Asia, but intra-regional trade shares in Europe and North America have remained steady or declined.

The share of intra-regional trade in Asian exports rose from 42 per cent in 1990 to 52 per cent in 2011, giving Asia the largest share of intra-regional trade in exports of any geographic region when the European Union is counted as a single entity. If individual EU member states are counted separately, Europe had the largest intra-regional share of any region in 2011, at 75 per cent. The share of intra-regional trade in North America's exports increased from 41 per cent to 56 per cent between 1990 and 2000, before falling back to 48 per cent in 2011. Excluding intra-EU trade, Europe saw its within-region share of exports drop from 35 per cent in 1980 to 29 per cent in 2011. Other WTO geographic regions (South America, Africa, the Middle East and the Commonwealth of Independent States) mostly export primary products to other regions. While their shares of intra-regional trade have increased, they remain small in comparison to other regions.

The real nature of interdependence among economies, resulting largely from international supply chains, can only be understood if trade is measured in terms of the value added by each location in internationally configured production processes. These new statistics may help to design better trade policies.

International supply chains play a major role in today's world economy: traded goods and services contain inputs that may come from many different countries, and traditional trade statistics misleadingly attribute the full transaction value of traded products to the last economy in the production process. This is why trade must be measured in value-added as well as gross terms. Global input-output tables, combining national input-output tables with gross bilateral trade flows, have been used to describe these production relationships among economies. Preliminary estimates of trade measured in value-added terms show that almost 30 per cent of total trade consists of re-exports of intermediate inputs, thus indicating increased international interdependence through international production chains. Since the mid-1990s, this measure has risen by almost 10 percentage points.

If measured in value-added terms, the contribution of services to international trade is much higher.

The contribution of services to total trade, when measured in value-added terms, was almost twice as high as the corresponding share measured in gross terms, rising from 23 per cent to 45 per cent in 2008. Services are key contributors to trade in goods, either in their role of facilitating international transactions or through their incorporation in the total production cost of merchandise. This has important implications for industrial and trade policies, especially those regulating services markets, and in relation to the integration of small and medium-sized enterprises in international supply chains.

The efficient sourcing of intermediate inputs is crucial for a country's export competitiveness.

Economies import more and more intermediate goods and services to produce both for the domestic market and for exports. A positive correlation has been found between access to imported inputs and export performance – the more an economy integrates into international supply chains, the more its exports grow. Efficient access to imports of intermediate inputs improves the capacity of firms to increase their productivity and remain competitive in an interconnected world.

Future scenarios

Projections of economic activity and trade are sensitive to assumptions, notably concerning technological progress, demographics, investment, energy/natural resources, transportation, institutions and policy.

In looking at future scenarios, technology is a key factor in the transformation towards productivity-driven growth. Productivity improvements in relation to energy and other primary commodities will be

important in light of expected price increases associated with further industrialization. Developments in the transport sector – infrastructure, fuel prices, innovation and regulation – will also impact the costs of trade and the global organization of production.

Several countries, mostly in the developing world, will experience favourable demographics but much will depend on the education and integration of new entrants in the labour force. Others will need to cope with an ageing population and a shrinking working population. With declining savings rates around the globe, capital mobility can play an important role in stimulating economic performance. Economic activity and trade also depend on the wider institutional and policy environment, which is difficult to predict. Specifically in regard to trade policy, current trends, such as the spread of international supply chains, may encourage further trade opening. At the same time, global imbalances, unemployment and environmental concerns may lead to pressure for trade policy reversals. The analysis is complicated by the existence of multiple interlinkages among the various forces driving change, and trade both affects and is shaped by these factors.

Changing assumptions about each shaping factor produces a wide range of potential future economic and trade scenarios. More is at stake for some countries than others, and not all current trends in trade will necessarily continue.

Developing and emerging economies have the most to gain from a vibrant economic scenario with further trade opening and the most to lose from a subdued economic outlook and faltering trade cooperation. Under the high case scenario, they could grow at an average annual rate of 7 per cent, compared with a mere 2.8 per cent in the second scenario. The latter would be barely above the estimated developed country rate of around 2 per cent under both scenarios. For exports, the divergence of the two scenarios is even more dramatic. Developing country export growth is estimated at 8.5 per cent per annum in the high case scenario and at less than 1 per cent in the low case. The latter rate would be below that of developed countries, which would grow at a rate of 1.5 per cent under the low case scenario and about 4.5 per cent in the high case scenario. The direction of trade would hardly change under the low case scenario, with trade among developed countries remaining dominant at over 40 per cent and trade among developing countries retreating slightly to just 18 per cent of total trade. By contrast, under the more optimistic scenario, these positions are reversed. Trade among developing countries would represent the largest share of global trade (at 43 per cent), while trade among developed countries would constitute some 17 per cent.

The rise of services trade is likely to continue although trade in manufactured goods remains important. Trends of increased trade within certain regional agreements are less likely to persist, with multilateral trade relationships across many regions having the potential to gain significantly in importance. Broad-brushed as they are, these results may raise as many questions as they answer, particularly in relation to the specific challenges faced by individual countries. Further detailed analysis is required for a more certain and detailed picture.

C. Fundamental economic factors affecting international trade

Demography, investment, technology, energy and other natural resources, transportation costs and institutions are fundamental economic factors that shape the overall nature of trade and explain why countries trade.

Demography

The world is experiencing dramatic changes in the size and composition of populations, with sharp differences among countries.

A country's demographic transition typically involves four stages. In the first stage, high fertility and mortality result in a young population and a low old-age dependency ratio. At the start of the demographic transition in the second stage, mortality declines while fertility initially remains high. Then fertility starts to decline and the working-age population increases. The second stage of the transition is associated with a demographic dividend – a condition enjoyed by the world as a whole for the last 40 years. But the third stage has now set in, characterized by ageing. The demographic transition then ends in the fourth stage with an older population and high old-age dependency ratios. The timing of the demographic transition differs widely among countries.

Demographic developments affect trade patterns and the level of import demand.

International differences in population dynamics are a factor determining comparative advantage. Most of the trade effects of the demographic transition, however, are likely to be due to changes in the composition of demand. Older groups in ageing countries will spend more on communication, transport and health services. In countries where the demographic transition is still in its early stages, per capita income will increase, and with it the size of the middle class. The demand for goods and services that are typically consumed by the middle class, such as recreation equipment, cars and mobile phones, as well as recreation and culture services, will disproportionately come from emerging markets.

Two other notable developments in the composition of the labour force linked to the demographic transition are a rising share of educated workers and an increase in female labour force participation. These trends will affect trade in ways not easy to predict.

The educational attainment profile of the working population will continue to increase in a large number of countries, predominantly developing ones, driving a global convergence in education. The demographic transition is also associated with changes in labour force participation rates. Female labour force participation is closely connected with falling fertility but it is also affected by cultural norms and institutions that differ widely among regions and countries. Female labour force participation rates are predicted to rise in the European Union, South and Central America, Sub-Saharan Africa and, to a lesser extent, the Middle East. These developments are likely to affect patterns of comparative advantage because they change the relative abundance of productive factors at a country level.

International migration is a component of demographic change.

Migration can directly influence population growth by changing population levels in different countries. It can also have indirect effects on population growth, mainly through its impact on fertility in affected countries. The global stock of international migrants grew by 38 per cent from 1990 to 2010. International migrants still constitute a very small fraction of the world population, amounting to 3.1 per cent in 2010. However, in several developed countries where fertility is low, immigration is the driving force behind population growth. Migrants are generally working-age adults and can reduce dependency rates in receiving countries. These trends will continue in the future.

Emigration rates of highly educated individuals differ widely across sending countries, exceeding 40 per cent in the Caribbean and in several Sub-Saharan African countries. In general, emigrants from Africa and South and Central America tend to be relatively highly educated. Various studies have argued that this "brain drain" need not be detrimental for sending countries on account of several mechanisms, including incentives for capital formation, remittances from migrants and the positive effects of migrant networks.

Migrant networks promote trade between source and host countries in two ways. First, they reduce trade costs relating to informational, language and institutional barriers while facilitating the creation of business relationships. Secondly, migrants boost trade because they demand disproportionately more goods and services from their origin country.

Urbanization and agglomeration effects are among the most salient global demographic trends.

Urbanization is likely to affect trade through changing relative efficiencies (comparative advantage). Between 1950 and 2011, the rate of urbanization (share of the population living in urban areas) increased by 77 per cent. Urbanization is expected to reach 67.1 per cent of the total population in 2050. Agglomeration economies, closely linked to urbanization, can also influence trade patterns indirectly via their impact on productivity. Innovation in knowledge-intensive sectors is particularly affected by the spatial concentration of economic activity. Comparative advantage in these sectors, therefore, will also depend on agglomeration.

The relationship between demography and trade is complicated by numerous factors.

Causality is likely to run in both directions. The possibility of reverse causality affects the link between migration and trade (trade links can affect migration decisions). The same applies to the link between urbanization and trade (trade opening can foster agglomeration). Institutions also have a significant effect on both demography and trade. Moreover, history shows that the timing of demographic transitions has been crucially affected by international trade. Overall, caution is called for in making predictions on the trade effects of demographic trends.

Investment

Investment in physical capital can lead to the emergence of new players in international trade, especially in the context of international supply chains, and change the comparative advantage of countries already widely engaged in international trade.

Public investment in roads, ports and other transport infrastructure reduces trade costs and hence could, for example, enhance the participation of Africa in world merchandise trade. For instance, the empirical literature suggests that doubling the kilometres of paved roads or the number of the paved airports per square kilometre of a country's territory can boost trade by 13 per cent and 14 per cent, respectively. Similarly, investment in information and communication technology (ICT) infrastructure could enable African countries to participate more fully in world markets for services. Investment in physical capital (such as plant, machinery and equipment) may transform a relatively labour-intensive economy into a relatively capital-intensive one over time, as it did in the case of Japan, which saw its capital-labour ratio increase from less than 10 in the early 1960s to almost 180 in 1990.

Domestic savings are crucial for enhancing investment in physical capital.

For high and middle-income countries, the correlation between savings and investment has been high during the last two decades. Countries with the highest average savings rates between 2000 and 2010 are mostly Asian nations and resource-rich economies in the Middle East and North Africa. Middle-income countries as a group had a savings rate of 30 per cent in 2010, almost double the level of high-income countries. High savings rates should continue to provide funds for investment in physical capital in middle-income countries. In low-income countries, growth will be central to higher savings rates. Effective tax regimes, sound macroeconomic policies and more efficient capital markets are also important for translating savings into investment.

Foreign capital flows can complement domestic savings in promoting domestic investment by lowering the cost of capital.

Overseas development assistance and migrant remittances have played a part in financing the savings-investment gap in low-income countries. The WTO's Aid for Trade initiative is also important in this regard as it can increase a country's supply capacity.

The importance of foreign direct investment (FDI) in increasing capital formation in low-income countries in the future should not be underestimated. In order to attract foreign capital inflows, low-income countries will need to adopt stable macroeconomic policies and develop strong institutions, such as a sound legal framework, effective transparency arrangements and independent regulation.

Private capital flows are also likely to be important for further enhancing investment rates in middle-income countries. The top ten recipients of FDI, portfolio investment and bank lending from abroad among developing economies during the last decade were almost entirely middle-income countries in Asia or Latin America. While deregulation and market opening measures led the way, continuous improvements in supporting infrastructure and the quality of institutions will be crucial for sustaining these private capital inflows. Some developing countries have become capital exporters in recent years, with outflows of FDI increasing from close to zero in the early 1990s to more than US$ 400 billion in 2010. In the longer run, high expected growth, familiarity with similar policy environments, and the strengthening of South-South trade links are likely to enhance South-South FDI.

Foreign capital flows also facilitate the development of international supply chains.

Foreign direct investment increases export possibilities for intermediate products and services, such as design and research and development (R&D). The transfer of technology and knowledge associated with FDI is likely to influence a country's comparative advantage over time. International financial relationships can increase trade flows by reducing information asymmetries between exporters and importers.

To the extent that investment and trade are complementary, global investment rules could ensure a more efficient allocation of resources across borders, which in turn should help trade.

Bilateral or regional agreements, which are being increasingly used to govern international investment, run the risk of creating regulatory divergence. A set of multilateral investment rules could address this and also open up more investment opportunities for smaller countries for whom bilateral networks may be disadvantageous.

Technology

The geography of technological progress is changing. New players are emerging among the countries driving technological progress, and technology transfer is becoming more regional.

In recent years, the world has experienced significant changes in the geography of innovation. Although the technological gap between high and low-income countries persists, R&D expenditure has become less concentrated. In general, empirical evidence supports the view that international spillovers tend to be localized although the degree of localization has decreased over time. One possible explanation for this is the growing importance of international production networks in trade. However, since production networks tend to be regional, intra-regional technology spillovers are greater than inter-regional spillovers. An implication of stronger regional spillovers is the possible development of groups of countries that become increasingly similar in terms of technology levels ("convergence clubs"). This may lead to more intra-regional trade, the emergence of shared economic interests and the evolution of stronger regional institutions.

Although most innovation still occurs in manufacturing, R&D in services has increased faster since the early 1990s.

R&D spending is highly concentrated. Nearly 90 per cent of R&D investment takes place in the manufacturing sector, in a few industries, including chemical products, electrical and non-electrical machinery (covering ICT) and transportation equipment. Nevertheless, R&D in services has grown in knowledge-intensive business services (KIBS) and may in the long run replace manufacturing as the engine of global innovation.

Technological progress is a major factor in explaining trade. Technology affects trade by shaping comparative advantage and reducing trade costs.

Countries trade on the basis of relative efficiencies, and knowledge spillovers create agglomeration forces that shape trade. Countries will tend to export products for which they have a home market advantage – that is, products with the greatest domestic demand. Technological innovation has also had a significant impact on trade costs through the introduction of jet engines, containerization, advances in information-based logistics, and ICT.

A two-way relationship exists between technology and trade. Technology drives trade and trade is one of the factors shaping technological progress.

Trade affects technological progress through incentives to innovate and through technology transfers. Incentives for firms to innovate that are affected by trade include market size (positive scale effect), competition (ambiguous competition effects) and technological spillovers (ambiguous effects of imitation). Trade also affects institutions that shape the economic incentives facing firms. Imports of technologically advanced goods provide access to the technologies they embody. In addition, international trade provides a channel of communication that favours cross-border learning of production methods, product design and market conditions. Exporting is also a channel of technology transmission.

Other factors affecting technological progress include intellectual property rights, the movement of factors of production, and a country's absorptive capacity.

Technological progress will be influenced by the strength of intellectual property (IP) rights. Theoretical arguments and empirical evidence on the relationship between IP protection and technological progress are mixed. Other important determinants of technology transfers are FDI flows, the movement of people, and direct trade in knowledge through technology purchases or licensing. The international diffusion of technology is not automatic. Differences in observed absorptive capacity among countries point to explanatory factors such as the ease of doing business and the quality of tertiary education systems.

In the future, we may see mounting pressure for specific domestic policies.

If the production fragmentation process continues or intensifies, governments will be increasingly pressured to adopt policies that foster the integration of domestic industries into international production chains. The policies involved may include R&D subsidies, investment in infrastructure, and reinforced IP protection. The perception of a misfit between the operating environment and the regulatory regime may also increase the demand by industry for international rules covering such matters as competition.

Technological innovations may also relocate business activities across countries and among large and small firms.

By individualizing production, 3D printing may provide small and medium-sized enterprises (SMEs) easier access to export markets. By reducing the importance of labour costs for comparative advantage, robotics may induce some manufacturing to relocate in developed countries. The internet will also influence buying and selling modalities in the retail sector.

Energy and other natural resources

The disposition of energy, land and water resources has a crucial bearing on the volume, pattern and growth of international trade, particularly in a world where these resources are distributed unevenly.

The link between national endowments of natural resources and exports is readily apparent in the case of energy and land but less so in the case of water. Typically, countries with energy reserves and land will tend to export products that use these factors intensively. The uneven international distribution of resources may create a temptation to exploit market power through the use of export restrictions. By reducing supply of the natural resource in international markets through export restrictions, for example, the world price of the resource can increase and impart a terms-of-trade gain for the exporting country. While just 5 per cent of world trade is covered by export taxes, the share is more than twice as high, at 11 per cent, for natural resource products. Of all export restrictions notified to the WTO, more than a third have been applied to such products. Countries with abundant supplies can also use control over their resources to support strategic and geopolitical objectives. To the extent that these motivations contribute to international tension, they can add a risk premium to the price of natural resources and also increase price volatility.

Increases in prices and the price volatility of natural resources, such as oil, can have large adverse effects on economic activity and international trade.

Since oil is a major factor of production and little scope exists for substitution in the short run, an increase in the oil price will reduce production and growth in net energy-importing countries. At the same time, higher oil prices should expand output and growth in net energy-exporting countries but this will not offset the negative consequences of a price increase on economies that are net importers of oil. In general, an increase in energy prices will raise the prices of these energy-intensive products and reduce demand for them, thus altering the commodity composition of trade for many countries. Volatility in oil prices tends to

reduce trade flows because it increases the risks faced by importers. Uncertainty about the future path of oil prices will lead households to postpone purchases of consumer durables and firms to postpone investment decisions. This reduces aggregate demand and total imports.

Substitution possibilities and technological change will largely determine the degree to which the finite availability of some natural resources influences economic growth and trade.

The exhaustibility of some natural resources has frequently caused a degree of alarm that may not be entirely warranted. The total supply of practically all exhaustible resources is not known for certain. Given appropriate economic incentives, reserves can be maintained or increased through the exploitation of deposits initially considered economically inaccessible. For example, over the last three decades, the stock of proven oil reserves rose by more than 140 per cent and the ratio of reserves to global consumption increased from 11 to 19. Innovation can also increase efficiency in the use of an exhaustible resource and lower its marginal extraction cost. New methods of exploration can increase the likelihood of making geological discoveries. Technology can lead to the substitution of non-renewable resources for renewables. Nevertheless, as exhaustible natural resources are run down, countries with large reserves will experience an erosion of comparative advantage in the relevant product lines.

The extraction and consumption of natural resources can have harmful environmental effects.

The most serious current example of negative externalities associated with natural resource use is the burning of fossil fuels. Many countries have taken steps, sometimes unilaterally and sometimes in concert with others, to mitigate the adverse consequences of carbon emissions. Climate change policy will prove crucial to the future evolution of energy prices and to the extent the world economy continues to rely on fossil fuels. Moreover, differences in the stringency of climate change policies adopted by governments can create competitiveness concerns, especially in energy-intensive sectors.

Energy needs are projected to rise by nearly one-third by the year 2035, with most of the growth in demand coming from emerging economies. The rapid development of shale gas in the United States will create a sea change in global energy flows and the pattern of international trade in oil. Nevertheless, higher energy prices are likely in the future. There is also likely to be increasing water scarcity in some areas of the world.

Fossil fuels will continue to meet the bulk of the world's energy needs, with the share of natural gas expected to rise. Almost all of the increase in natural gas supply will be due to shale gas production. The United States will become a net exporter of natural gas, while demand for Middle East oil is likely to come increasingly from Asia. These developments will give rise to shifts in the composition of trade.

The populations of South Asia and the Middle East as well as large shares of China's and North Africa's population will face increasing water scarcity. They will be required to import more food and agricultural products, raising the possibility that the long-term decline in the share of food and agricultural products in international trade might be arrested or even reversed.

Transportation costs

Transportation costs affect the volume, direction and composition of international trade.

Transportation costs drive a wedge between origin and destination prices, so higher transportation costs will reduce the volume of trade. Furthermore, if transportation costs are charged on a per unit basis rather than simply proportionately to the price of the traded good, higher transportation costs will tend to decrease the share of low-quality goods and goods with low value-to-weight ratios in international trade. Declining transportation costs can increase the range of goods available for international commerce. For example, estimates from Latin American countries suggest that a 10 per cent decline in average transport costs would be associated with an expansion of more than 10 per cent in the number of products exported, and a 9 per cent increase in the number of products imported. Transport costs are also time-sensitive, and this has become more important with the rise of international supply chains, just-in-time inventory management and lean retailing.

Empirical estimates show that a delay of one week in shipments can reduce the volume of exports by as much as 7 per cent or raise the delivered price of goods by 16 per cent and for extra time-sensitive goods, such as parts and components, by as much as 26 per cent. Being landlocked and distant from markets adds significantly to transportation costs. Evidence suggests that, on average, being landlocked reduces trade volume by about 40 per cent, while an increase in distance between trading partners lowers bilateral trade by about 9 per cent. The extent and quality of transportation infrastructure in source, destination and transit countries also have a major impact on transportation costs. The disadvantage of having poor transportation infrastructure is substantial. For example, a country whose road infrastructure quality placed it on the 75th percentile globally, i.e. three-quarters down to the bottom, would have transportation costs that are 12 percentage points higher than the median country. As a consequence, its trade will on average be 28 per cent lower than that of the median country.

The transportation sector is a service industry whose efficiency will depend in part on how much competition is allowed in the sector.

Lack of competition may arise from the existence of a natural monopoly but government policies may also play a big role. In the case of maritime transport, for example, the liner market has been exempt from national anti-trust laws since the turn of the 20th century partly because of the desire to reduce price volatility in the market. However, this reduction in price volatility has come at the cost of higher freight charges and lower trade volumes. For instance, limited competition in maritime transport means developing countries pay as much as 30 per cent more in freight charges and consequently have some 15 per cent less trade. Significant efficiency gains are likely to result from increased competition. In the case of air transport, studies of open skies agreements tend to find that they lead to reduced transport prices and increase cargo quantities.

Innovation makes an important contribution to the reduction of transportation costs.

The development of the jet engine reduced the cost of air transport more than ten-fold. Containerization in maritime transport ushered in a system of automated handling of cargo and multi-modal transport that both accelerated delivery times and reduced uncertainty about them.

Customs and other border procedures and controls governing the movement of goods across national borders can create delays and increase trade costs.

The growing prominence of time-sensitive trade and international supply chains increases the cost burden of border and customs-related delays. The potential reduction in costs through trade facilitation is significant and explains why this is a major part of the WTO's Doha Round negotiations. The trade facilitation measures being negotiated in Geneva have the potential of reducing total trade costs by almost 10 per cent for OECD countries alone. Many developing and least-developed economies suffer disproportionately from costly border procedures. The cost of importing into low-income countries has been estimated at some 20 per cent higher than in middle-income countries, plus a further 20 per cent in comparison to high-income economies.

The real price of energy, including fuel, is likely to rise in the long-term. However, there is scope for taking policy initiatives at the national and multilateral level to offset rising fuel costs.

Rising energy prices will adversely affect some transport modes more than others. On the basis of various estimates of the share of fuel in the cost of transportation, a double-digit rise in transportation cost is likely. Energy costs also influence the composition of traded goods, as they are likely to more adversely impact goods with low value-to-weight ratios. Although the evidence is far from conclusive, high oil prices can also induce trade diversion from trading partners located further away towards neighbouring regions.

Policy initiatives to address rising fuel costs include improving the quantity and quality of transportation infrastructure, successfully concluding the Doha Round negotiations on trade facilitation, introducing more competition, and supporting innovation. Ample scope exists for improvements in these areas to compensate for higher energy prices in the future. If no significant progress is made on these fronts, the expected rise in fuel prices is likely to translate into a long-run rise in transportation costs. The consequences will be slower trade growth, more regionalization of trade, a shift in the composition of trade which will favour high-quality goods and goods with higher value-to-weight ratios, a reduction in the share of time-sensitive goods in trade, a reduction in product variety, a move away from merchandise goods to services, and greater reliance on the sale of technology, ideas and blueprints, since these do not require a lot of transportation services.

Institutions

Institutions include social norms, ordinary laws, regulations, political constitutions and international treaties within which policies are determined and economic exchanges are structured.

This report looks at three sets of institutions: political institutions, such as the form of government and political borders; economic institutions, such as the quality of the regulatory system and the rule of law; and cultural norms, such as those embedded in social values.

In the long run, a two-way relationship exists between international trade and institutions.

On the one hand, institutions are a shaping factor of trade. Institutional differences create transaction costs. They may also form the basis of comparative advantage in certain sectors or production tasks. Domestic and international institutions determine how trade and trade-related policies are set and negotiated. On the other hand, international trade is an important determinant of institutional development in the political, economic and cultural spheres.

International trade may be linked to systems of government.

Some studies have concluded that open trade policies tend to be associated with more democratic regimes but this relationship is not confirmed for a considerable

number of individual countries. Indeed, some have argued the contrary. Moreover, the relationship may flow in the opposite direction – the form of government could be affected by trade openness. Globalization alters factor prices and may shuffle wealth and economic power among social groups, possibly leading to pressure for political change.

Political borders hinder international trade but they also respond to changes in the trading environment.

Political borders create different forms of transactions costs that negatively affect international trade. The empirical literature finds that this "border effect" is sizeable – only among industrialized countries, borders are estimated to reduce international trade by 30 per cent. On the other hand, globalization reshapes national borders. Economic integration changes the calculus regarding national sovereignty, releasing both centrifugal and centripetal forces. The coexistence of these forces contributes to an explanation of the growing number of sovereign countries over the past 60 years and the parallel growth of supranational institutions. The rising importance of international supply chains, in association with deeper trade agreements, is evidence of the complex relationship between changing borders/ sovereignty and international trade.

Strong economic institutions promote international integration and are an important source of comparative advantage.

Institutions that guarantee the value of contracts, protect property rights, defend efficient regulations and underwrite respect for the law create incentives for exchange by reducing transactions costs and costs associated with uncertainty. Countries with better institutions specialize in the production of more complex products for which a resilient contractual environment is essential. Available empirical evidence confirms the importance of the relationship between the costs of trade and institutional quality. The quality of economic institutions is also associated with the ability to integrate into international supply chains and to attract foreign direct investment.

Differences in informal institutions can create various costs that may limit international trade. But long-run commercial relationships and the presence of deep agreements may smooth these costs.

In addition to formal institutions, informal institutions such as social norms and conventions (in a word, culture) structure human interactions and, therefore, affect international trade. Cultural differences may be negatively correlated with trade flows. Different informal institutions can form an implicit barrier to trade as they create transactions and information costs and may reduce trust between agents. On the other hand, over the long run international trade is a vector of cultural transmission and contributes to creating trust between heterogeneous communities. Formal institutional structures may also be constructed to bridge informal institutional differences among countries.

D. Trade openness and the broader socio-economic context

Trade takes place in a broad economic, societal and political context. This context matters for trade policy decisions. Historically, social and macroeconomic concerns have repeatedly influenced decisions in trade policy matters. Both themes are currently again high on the political agenda. Another issue that has rapidly been gaining prominence in national, regional and global policy debates is environmental sustainability.

Social concerns: inequality and unemployment

Increasingly, policies need to be perceived as supporting jobs in order to receive public support.

Jobs have been high on policy-makers' agendas in recent years. The concern is widespread although the reasons for it differ among countries. Some are struggling to bring unemployment down from record levels achieved during the Great Recession. Others are looking for ways to absorb large cohorts of young workers into the formal labour market or to facilitate the transition of rural workers into urban labour markets.

Trade is good for jobs but can put labour markets under pressure to adjust.

Trade opening contributes to the creation of new and high-quality jobs, in particular in firms that successfully integrate into global markets. But it also puts jobs in non-competitive firms under pressure and some of those jobs may be destroyed. The adjustment process following trade reform may therefore lead to surges in unemployment. Empirical evidence, however, indicates that the long-run employment effects of trade opening are likely to be positive.

Trade – and globalization more generally – facilitates the spread of ideas and innovation. This contributes to economic growth, in particular in countries that are in the process of catching up with the technology frontier. But the spread of ideas and innovation also implies technological change. Successful integration in global markets therefore implies the constant need for individuals and societies to adjust to changes in the competitive environment.

Adjustment challenges differ across countries and notably depend on countries' level of development.

The nature and the extent of labour market challenges will differ among countries. For those not yet well integrated into global markets, successful integration may imply significant economic restructuring, most likely from agricultural to industrial and services employment. This is the case for many low-income countries, in particular least-developed countries (LDCs). A number of emerging economies may face the double challenge of having to employ large numbers of rural workers while simultaneously moving into higher value-added activities. Taking into account the continuing evolution of comparative advantage and technological change, pressure for adjustment in labour markets may also persist in industrialized countries.

The adjustment path is also influenced by within-country income distribution, as inequality may hamper process.

Evidence suggests that within-country inequality has increased in many countries in the past two decades. Income distribution matters for trade flows, as it affects comparative advantage and consumption patterns. Inequality may hamper economic adjustment to changes in trade policy or the competitive environment, in particular in economies where financial markets do not function well.

Policies strengthening the capacity of economies to adjust to changes in the competitive environment can have high pay-offs in terms of economic benefits and public support for trade reform.

Well-designed education and training policies can play an important role in facilitating adjustment to change and in easing the burden falling on individuals. Social protection systems and active labour market policies can also play an important role. Policies that strengthen the enabling environment for enterprises can have particularly high pay-offs, as they positively contribute to job creation. More generally, initiatives – like Aid for Trade – that aim at strengthening supply responses can contribute to fortifying the multilateral system's capacity to handle challenges in labour markets.

Environmental concerns

The transition to a sustainable development path involves careful management of the multifaceted relationship between trade and the environment.

Trade openness and environmental protection are key components of sustainable development, and policies in both fields should work to utilize existing resources better. Beyond this broad level of commonality, trade and the environment interact in complex ways, with multiple links and feedback effects between the two systems. If not managed carefully, this relationship may give rise to tensions which can undermine the positive contribution of trade to economic growth and sustainable development.

The impact of trade on the environment may be positive or negative. Trade protectionism is ineffective in addressing negative environmental effects because it deprives the international community not only of an engine of economic growth but also of the environmental gains associated with improved efficiency.

Trade involves a complicated set of changes and the net effect of trade on the environment has not been measured robustly. The dramatic increase in world trade during the past three decades has drawn attention to the scale effects of trade on environmental quality.

Many unexploited opportunities exist to bolster environmental gains from trade. Trade has the potential to induce changes in the methods by which goods and services are produced, thereby lowering the energy and pollution intensity of production, and lessening the scale effects of trade. These beneficial effects will not happen automatically. They will be contingent on many conditions, including an open trade regime, sound environmental policies and other institutional factors. This highlights the importance and urgency of the first ever multilateral negotiations on trade and the environment, where WTO members are seeking to reduce or eliminate the barriers affecting trade in green goods and services.

Transport has also come under increased scrutiny because of its contribution to carbon emissions. Although the bulk of trade relies on maritime transport, which is the most efficient mode of transportation in terms of carbon emissions, trade-related transport is projected to increase sharply during the next few decades, as are transport-related emissions costs.

Environmental policies may affect the competitiveness of particular firms and sectors, creating pressures on open economies to resort to green protectionism.

Besides the scale effects of trade, academic and policy discussions on the interface between trade and the environment have devoted significant attention to the competitiveness effects of environmental policy, which are difficult to analyse but are sometimes perceived as holding back environmental policy reform. Environmental policies inevitably affect production and consumption patterns, and may therefore have adverse effects on the competitiveness of particular firms or sectors. Governments may respond to resulting pressure from industry by incorporating trade-restrictive elements into environmental policies as a means of compensating affected firms and sectors.

A growing number of governments have put in place ambitious green incentive packages. The emphasis on a variety of environmental and industrial policy goals as a justification for these measures may undermine their environmental effectiveness and exacerbate their potentially adverse trade effects.

One response adopted by a growing number of governments to concerns about the compliance costs associated with environmental policy has been to promote "green competitiveness". As part of these efforts, several governments have established incentive packages for green technologies, with a focus on renewable energy. These measures have been variously justified on the basis not only of particular hurdles facing renewable energy but also of broader policy goals such as stimulating economic growth, spurring job creation and promoting export diversification. The risk is that the intertwining of environmental and green competitiveness objectives may increase the vulnerability of renewable energy incentives to powerful lobbies and rent-seeking behaviour or result in flawed design due to the lack of sufficient information to achieve multiple (and often vaguely defined) policy objectives. This could exacerbate the adverse trade effects associated with some types of incentive measures and undermine their environmental effectiveness.

The emerging patchwork of regional, national and sub-national environmental policies to tackle global environmental problems such as climate change will add complexity to the future management of the interface between trade and the environment.

This patchwork of regimes may lead to concerns about the loss of competitiveness of energy-intensive and trade-exposed firms and sectors, and the related possibility of "carbon leakage", which countries may try to manage by extending carbon pricing to imports. This kind of second-best policy is likely to raise international tension and carries the risk of mixing environmental and protectionist objectives. It is a poor substitute for international cooperation on climate change policy.

The individual and collective decisions by open economies in managing the relationship between trade and the environment carry significant implications for the future of international trade and the WTO.

Collective efforts that result in agreed policy approaches towards global environmental problems would limit the likelihood of a clash of regimes. This suggests, however, that the future evolution of the interface between trade and the environment may depend on improved multilateral cooperation at the WTO as much as within the international environmental governance regime.

Macroeconomic and financial concerns: trade finance and currency movements

Macroeconomic and financial shocks can only affect trade beyond the short term if they alter fundamentals.

The 2008-09 financial crisis could generate long-term effects if it results in a lasting contraction of the financial sector or triggers less than temporary exchange rate movements.

Finance is the lubricant of commerce. While normally a low-risk proposition, the financial crisis affected the supply of trade finance.

Financial crises affect the supply of trade credit through heightened perceptions of risk and re-financing difficulties in money markets. To prevent trade finance markets from collapsing in 2008-09, the G-20 intervened by offering up to US$ 250 billion in additional liquidity and risk mitigation capacity, two-thirds of which has been used by traders.

While the trade finance markets recovered quickly after the crisis in the major markets, problems with accessing affordable trade finance have worsened for traders in low-income countries. Multilateral development banks have developed a network of trade finance facilitation programmes aimed at supporting trade transactions at this lower end of trade finance markets. Demand for these facilities keeps growing, as an indicator of the market gap in these countries.

A risk of the current downsizing of the financial sector is that it could potentially lead to a reduction in the supply of trade finance. Deleveraging may affect trade negatively if new credit is rationed to meet prudential ratios.

The new prudential system should restore incentives to engage in low-risk, safe banking activities such as trade finance. In this case, lending would be reoriented towards real economy financing, including trade finance. Multilateral agencies will need to remain engaged in trade finance, at least to help fill the structural gap at the lower end of the market. Dialogue with regulatory agencies will need to be pursued to ensure that trade finance is recognized as a development-friendly and low-risk form of finance.

The trade impact of exchange rates can be analysed in terms of currency fluctuations as well as relative currency levels – so-called misalignments.

On average, exchange rate volatility has a negative, even if not very large, impact on trade flows. Exchange rate volatility increases commercial risk, introduces uncertainty, and can influence the decision of whether or not to enter foreign markets. The extent of these

effects depends on a number of factors, including the existence of hedging instruments, the structure of production (e.g. the prevalence of small firms) and the degree of economic integration across countries.

In the longer run, the situation is less clear. Economic theory suggests that when markets are free of distortions, an exchange rate misalignment has no long-run effect on trade flows, as it does not change relative prices. But long-run effects are predicted in models that assume market distortions. In the short run, when some prices in the economy are "sticky" (i.e. take time to adjust), movements in nominal exchange rates can alter relative prices and affect international trade flows, although this depends on several factors. Persistent misalignments in exchange rates are a systemic irritant in international trade because they fuel perceptions of unfair competition, creating pressure on WTO members to use trade policy measures to redress perceived monetary imbalances. Exchange rate issues can be expected to remain with the world trading system for some time, suggesting the need for improved monetary cooperation.

E. Prospects for multilateral trade cooperation

This report has identified a number of trends in the nature, composition and geography of trade as well as in the trading environment, which raise challenges for the multilateral trading system.

Among the main trends discussed are the emergence of international supply chains, the rise of new forms of regionalism, the growth of trade in services and increased linkages between trade in goods and trade in services. Other factors are higher and more volatile commodity prices, the rise of several emerging economies, growing concern regarding the social and environmental effects of trade, and the increasing potential for tensions between WTO rules and those in other international bodies.

As it has in the past, the WTO will need to respond to these challenges and adjust to the realities of the 21st century.

Traditional market access issues will remain on the agenda.

With regard to tariffs, priorities involve the breaking of the market access impasse and the multilateralization of preferential tariffs. The reasons behind the stalemate in the market access negotiations are several. One step towards a solution, however, may involve a redefinition of special and differential treatment to better reflect differences among developing countries. This could be part of an attempt to re-examine the role that reciprocity should play in the negotiations.

Another contribution to breaking the deadlock in this area would be to acquire a better understanding of the value of tariff bindings and the corresponding reduction in trade policy uncertainty. At the same time, proposals to reduce the trade-distorting effects of preferential rules of origin would need to be examined. While some of the action in this area would have to take place at the level of preferential trade agreements (PTAs), the WTO could play a central role in a complementary top-down approach.

With regard to non-tariff measures (NTMs), the WTO will need to pursue its effort to increase transparency and improve existing mechanisms. This may involve changing incentives for WTO members to abide by their notification obligations as well as reinforcing review and monitoring mechanisms. Beyond transparency, a greater focus on regulatory convergence will be required. WTO members will need to re-examine existing provisions and the case for adopting multilateral disciplines to ensure the right mix of regional and multilateral convergence.

The WTO also needs to find ways of refining the "tests" used today to distinguish between legitimate measures and those that are protectionist. Finally, a specific NTM-related issue that has been identified as a matter that should form part of the WTO's agenda is re-balancing in terms of the relative attention devoted to import barriers and to export restrictions.

Proposals aimed at addressing challenges related to the "servicification" of manufacturing involve establishing mechanisms to ensure that the position of manufacturers is taken into account in services negotiations, and that services and goods market opening are not negotiated separately, with commitments in one area traded against commitments in the other. As regards proposals to address the challenges that arise in the services area as a result of the internationalization of supply chains and the proliferation of public policies, these are largely similar to those discussed above in relation to the proliferation of NTMs.

New issues are also emerging.

The inclusion of investment and competition policy on the WTO agenda remains contentious but there may be new impetus from some quarters for addressing these issues in the WTO. Environmental measures will continue to gain prominence, particularly given the urgency of tackling climate change. Establishing disciplines on fishing subsidies and the opening of markets for environmental goods are two areas in which the WTO can contribute to sustainable development.

Fragmentation of environmental policy-making and the experimentation that this allows can have advantages. But this carries the risk that measures taken domestically will be challenged at the WTO when they have trade effects. Indeed, several recent WTO disputes involve industrial policies aimed at promoting a green economy. It has been argued that the challenges raised by exchange rate misalignments and global imbalances relate to a "coherence gap" in global governance. WTO-triggered trade actions alone would not provide an efficient instrument to compensate for the weaknesses in international cooperation in macroeconomic, exchange rate and structural policies but they could form part of a broader solution.

The WTO could also address internal governance matters.

A number of the challenges arising from trends in trade and the trade environment relate to WTO governance. Among the institutional reforms that have been raised is the notion of a variable geometry model that would allow subgroups of members to move forward on an issue while others abstain. Variable geometry with most-favoured nation (MFN) typically takes the form of the so-called "critical-mass" approach, where a sufficiently large subset of the entire membership agrees to cooperate under the auspices of the WTO without excluding non-participants. A critical-mass approach could be used to address the challenges raised by the proliferation of regional trade agreements. Where the non-discrimination constraint can be relaxed, a plurilateral agreement could provide an alternative.

Other proposals have focused on the role of the WTO Secretariat in supporting the decision-making process. The idea would be to give greater power of initiative to the WTO Secretariat and Director-General without diluting the authority of the membership. A source of concern is that an increase in efficiency may come at a cost in terms of legitimacy. To address the challenge of small and poor country participation, one option could be to improve the representation of developing country coalitions.

The role of the WTO in global governance is becoming a pressing question.

The growing number of PTAs has been identified as the greatest challenge to the WTO's role in multilateral trade governance. The challenge is all the greater as more recent PTAs go beyond WTO disciplines and promote deeper cooperation on domestic regulatory issues. A related issue is current efforts to negotiate so-called mega-PTAs. Thus, a key question for the WTO turns on the prospects for "multilateralizing" the gains made in these PTAs, not just on tariffs but also in order to secure regulatory convergence. In addition, the growing relevance of NTMs that pursue legitimate policy objectives, such as health and the protection of the environment, make it necessary for the WTO to reinforce its links with other multilateral institutions that deal with such issues.