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TOWARDS MORE BALANCED GROWTH STRATEGIES IN DEVELOPING COUNTRIES: ISSUES RELATED TO MARKET SIZE, TRADE BALANCES AND PURCHASING POWER

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Abstract

The global crisis has disrupted the favourable external environment that made export-led development strategies viable. Developing countries can compensate for the resulting decline in aggregate demand growth through domestic demand if their domestic markets are sufficiently large and if they avoid an import boom, which would cause balance of payments problems. Concentrating on household consumption, the paper shows that the sales potential in some large emerging economies is approaching that in developed countries but also that imports might meet most new domestic consumption demand. Sustaining a shift towards a more balanced growth path requires changes in the production structure, fostered by product innovation, to make domestic production patterns better correspond to newly emerging demand patterns. The associated new employment and wage opportunities would allow realizing emerging sales potentials through rising incomes, rather than rising household debt.

I. INTRODUCTION

Many developing countries have pursued export-led growth strategies over the past three decades. The success of such strategies depends on rapidly growing global demand and the ability of a country to enter market segments with high demand growth and potential for productivity growth. The onset of the global crisis in 2008 disrupted the favourable external economic environment that had made export-led growth strategies viable.

It is well-known that export-led growth strategies must sooner or later reach their limits when many countries pursue them simultaneously: competition among economies on the basis of low unit labour costs and light taxation means a race to the bottom, mostly with little gains for economic development but always with potentially severe social consequences. What is new at the present juncture, where growth of demand from the developed countries must be expected to remain weak for years to come, is that these limits are reached much earlier. Therefore, a rebalancing of the forces of growth towards a greater weight of domestic demand seems indispensable. This will be a formidable task for all developing countries, though more difficult for some than for others.

Based on a demand-side perspective, this paper focuses on three main challenges in switching from a growth strategy based on exports to one based more on domestic demand. It, first, analyses whether

developing countries have sufficiently large domestic markets to replace the growth stimulus from exports of manufactures to developed countries by domestic demand, especially household consumption. Suggestions for a greater role of consumer demand in developing countries' growth strategies have often been frowned upon because of these countries' alleged insufficient market size. However, rapid growth in many of these countries over the past two decades may well have changed the situation. Given that a rebalancing of growth strategies will imply changes in developing countries' policy orientations, it is crucially important to determine whether the required sales potential exists before considering the adoption of ensuing policy changes. The paper, secondly, examines the implications for international trade and the structure of domestic production of such a shift towards a more balanced growth strategy. Thirdly, it considers how domestic purchasing power can be boosted such that the sales potential can be realized through rising incomes, rather than rising debt.

The paper contributes to the literature in three ways. First, focusing on market size and the balance-of-payments constraint to growth, it adds a demand dimension to the debate on the conditions that may allow developing countries to continue their recent process of income convergence. This complements the supply-side focus of OECD (2013) and discusses the likelihood that developing countries will actually be able to increase domestic demand and productive capacity which World Bank (2011) identifies as necessary to ensure sustainable growth in developing countries. Adopting a demand-side perspective facilitates an examination of the processes involved in shifting the orientation of a country's growth strategy from one component of demand (i.e. exports) to another (i.e. domestic demand). It also allows establishing a link between the orientation of growth strategies and the current debate on global rebalancing, much of which relates to the share of household consumption in aggregate demand. The G20 Leaders' Statement (2009) at the Pittsburgh Summit called for a rotation of global demand from countries with a current account deficit (especially the United States) towards countries with a current account surplus (such as China and Germany), where domestic expenditure in deficit countries would no longer exceed their income but rapid global growth would be maintained. This is because surplus countries would, at least for a period of time, record accelerated domestic demand growth in excess of their income. Finally, some of those countries whose export opportunities may be adversely affected by a prolonged period of slow growth in developed economies may risk falling into the so-called "middle-income trap", as reduced growth of their manufactured exports may significantly slow down economic growth. It is generally argued that those countries will increasingly need to rely on innovation (i.e. "investment" in the national accounting identity) and household consumption expenditure in order to continue to catch up to the income levels and standards of living of the developed countries.

Second, the paper builds on the principles of satiability and of a hierarchy of needs in consumer preferences for an econometric estimation of the relationship between per capita income and household consumption expenditure. Estimating this relationship for various individual products and product categories improves on Dargay and Gately (1999), IMF (2005) and Dargay, Gately and Sommer (2007) whose estimations are limited to passenger cars. Combining the resulting estimates related to the income elasticity of demand with projected per capita growth rates and demographics to simulate the sales potential of consumer goods in developing countries complements Kharas (2010) and Bussolo et al. (2011) who infer such sales potentials from supply-side based projections of the evolution of the middle class in developing countries. Third, simulations based on the GTAP-model build on Mayer (2012) to indicate what difference it would make to trade flows if the shift in growth strategy was part of global rebalancing characterized by a fall in consumer spending as a share of GDP in the United States and a rise in all other countries, taking into account differences in income elasticites of demand across products and countries.

The paper is structured as follows: Section II examines what a shift towards a more balanced growth strategy would entail in terms of the various domestic-demand components in the national income accounting identity. While underlining the importance of both government spending and, especially, investment for boosting demand growth, it emphasizes household consumption expenditure, which is by far the largest component of domestic demand, generally accounting for between half and three quarters of aggregate demand. The next three sections assess the size of developing countries' domestic markets.

Sections III and IV focus on consumer preferences and the income elasticity of demand and discuss non-linearities in the evolution of consumer spending patterns as per capita income rises. Section V assesses the sales potential on developing countries' domestic markets which in addition to the income elasticity of demand depends on per capita income growth and demographics. The analysis suggests that potential growth in consumer good sales in the large emerging economies may be sufficiently rapid over the coming two or three decades to compensate for declining growth of their exports to developed countries. Section VI simulates ensuing trade impacts, showing that most new domestic consumption demand risks being met by imports, but argues that innovative investment would allow domestic firms to develop new products, and customize existing ones, to meet the preferences of domestic consumers and avoid an import surge. The concluding section discusses how countries may create the domestic purchasing power required for the rising sales potential to be realized.

II. WHAT DOES "SHIFTING FROM AN EXPORT ORIENTED TO A MORE DOMESTIC DEMAND ORIENTED GROWTH STRATEGY" ENTAIL?

A. *The national income accounting identity and economic growth*

The orientation of a country's growth strategy, whether more towards exports or more towards domestic demand, implies differences in the growth contribution of the various elements of the national income accounting identity expressed as:

$$Y=C+I+G+(X-M) \tag{1}$$

where a country's output (Y) is the sum of household consumption expenditure (C), investment (I), government expenditure (G) and the current-account balance, i.e. the difference between exports (X) and imports (M).[1] Each element on the right-hand side of the equation has two components, one of which is autonomous and the other a function of national income, which in turn equals output (Y). An export-oriented growth strategy will pay particular attention to the relationship between exports and imports, while the other three components will be of greater interest in a more domestic-demand-oriented growth strategy.

Most models of economic growth pay little attention to the various components of the national income accounting identity. Such models are supply-driven, with output growth being a function of factor inputs and factor productivity. Aggregate demand for output is assumed to be sufficient for full utilization of capacity. Trade is the one component of the accounting identity that enters supply-based growth analyses, sometimes through the terms of trade (defined as the ratio of export prices to import prices), but more usually on the assumption that "trade openness" contributes to capital accumulation or productivity growth. Different studies measure openness differently: some through tariff rates or non-tariff barriers, but most commonly as some ratio of trade flows to output (Harrison and Rodriguez-Clare, 2010).

From such a supply-based perspective, "export-oriented growth" refers to a high ratio of exports and imports relative to output (($X+M$)/Y), i.e. being very open to trade. A high degree of openness to trade may contribute to growth if imported inputs are more productive than domestic inputs, or if there are technological spillovers or other externalities resulting from exporting or importing. The literature on global value chains suggests that a high degree of trade openness will have a positive effect on growth, particularly in countries that export a large proportion of manufactures and succeed in "moving up the value chain", i.e. they increase the value-added content of their exports. A high degree of trade openness is also of microeconomic relevance, since it determines the degree to which the sectoral structure of domestic production is delinked from that of domestic demand. This gap will be particularly wide for

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[1] Treating the current account as exactly equal to net exports is an approximation, which assumes transfers to equal zero. Transfers in the form of workers' remittances play a significant role in the national income of poor countries.

countries that export a high proportion of primary commodities; but it will also be substantial for countries that produce goods, such as consumer electronics, which few domestic consumers can afford.

The national income accounting identity is of immediate relevance for the macroeconomic causation of growth if it is considered from the demand side. From a demand-based perspective, "export-oriented growth" refers to a large difference between exports and imports relative to output $((X-M)/Y)$, i.e. running a large trade surplus. The reason why this perspective considers the degree of openness as being less relevant for growth is that, focusing on the share of household consumption in output, the national income accounting identity can be rearranged as:

$$\frac{C}{Y} = 1 - \frac{(I+G)}{Y} - \frac{(X-M)}{Y} \tag{2}$$

where any given share of household consumption in output (i.e. C/Y) is compatible with an unlimited range of values of trade openness (i.e. $(X+M)/Y$). A country can have a high share of consumption in output and still export most of its output. By contrast, the larger the trade surplus (i.e. $(X-M)/Y$), the larger will be the growth contribution of exports, and the smaller will be the contributions of the domestic demand elements (i.e. C, I and G) required to attain a given rate of growth.

A related demand-based meaning of export-oriented growth emphasizes the role of the balance-of-payments constraint in limiting output growth. From this perspective, export orientation is relevant for a country's growth strategy for at least two reasons (Thirlwall, 2002: 53). First, exports are the only truly autonomous component of demand, i.e. they are unrelated to the current level of national income. The major shares of household consumption, government expenditure and investment demand are dependent on income. Second, exports are the only component of demand whose revenues accrue in foreign currency, and can therefore pay for the import requirements of growth. Growth driven by consumption, investment or government expenditure may be viable for a short time, but the import content of each of these components of demand will need to be balanced by exports. Of course, such balancing is not necessary if a country accumulates external debt, absorbs a rising amount of net capital inflows or lets the real exchange rate depreciate. However, the length of time any of these three strategies can be pursued depends very much on the external economic environment (e.g. the size of the rate of interest on international capital markets). Adverse changes in the external environment can quickly make them spiral into a balance-of-payments crisis.

At what point in time the balance-of-payments constraint is felt depends on the import content of the various components of aggregate demand (Y_D) which are a part of leakage, i.e. the fraction of a change in national income that is not spent on current domestic production, but instead saved (s), paid in taxes (t) or spent on imports (m). Thus, the determination of aggregate demand can be schematically expressed as:

$$Y_D = \frac{I+G+X}{s+t+m} \tag{3}$$

A special case of this equation is the dynamic version of Harrod's foreign trade multiplier. In this case, household consumption, investment, and government expenditure have no autonomous element and trade is assumed to be balanced in the long run (i.e. $X=M$), because all output is either consumed or exported and all income is consumed either on domestic goods or imports. This means that savings and taxes must equal investment and government expenditure (i.e. $s+t=I+G$). Thus, the growth rate of country i (g_i) is determined by what is known as "Thirlwall's law" and is expressed as:

$$g_i = \frac{\varepsilon_i z}{\pi_i} \tag{4}$$

where ε_i is the world's income elasticity of demand for exports from country i, π_i is the income elasticity of demand for imports by country i, and z is the rate of world income growth (Thirlwall, 1979). According to equation (4), a country's growth rate is determined by the ratio of export growth to the income elasticity

of demand for imports. The growth of a country's exports (x_i) – with $x_i = \varepsilon_i z$ – is determined by what is going on in the rest of the world. It relaxes the balance-of-payments constraint and influences the growth of Y_D, and hence the growth of output (in the short run via the rate of capacity use and in the long run by motivating the expansion of capacity).[2] Applied to the current situation of a likely prolonged economic slump in developed countries, equation (4) implies that developing countries that face declining export earnings will find it difficult to sustain a high rate of growth if satisfying accelerating expenditure in the various domestic-demand components triggers a surge in imports.

In addition to the impact on the expansion of exports taken as a bundle, the extent to which an exporting country's growth rate is affected by economic growth in the rest of the world also depends on its pattern of specialization.[3] If a country exports goods and services with a relatively large potential for innovation and technological upgrading, output growth could be boosted through improved factor productivity or through an increase in the income elasticity of demand stemming from innovation-based improvements in the quality of goods. If a country exports from sectors with more rapid international demand growth, it could benefit from a larger income elasticity of demand for its exports, thus boosting output growth by attaining a higher ε/π ratio. Sectors in which there is significant potential for innovation may be called "supply dynamic", while sectors that benefit from a rapid growth of international demand may be called "demand dynamic" sectors. And there is a significant degree of overlap between the two groups (Mayer et al., 2003). Compared with primary commodities, manufactures are usually considered as having both greater potential for innovation and technological upgrading as well as better international demand prospects. Export-oriented industrialization is a strategy that exploits this overlap during periods of favourable export opportunities with a view to increasing a country's ε/π ratio (especially through an increase in ε) and therefore its growth rate. On the other hand, this also means that, in the current context, the adverse impact of slow growth in developed countries is likely to be greater on developing countries that pursue an export-oriented growth strategy that relies mainly on exports of manufactures than on developing countries whose similar strategy relies mainly on exports of primary commodities.

B. A demand-side perspective on the transition from an export-oriented to a more domestic-demand-orientated growth strategy

Considered from a demand-side perspective, there are three main challenges in switching from a growth strategy based on exports to one based more on domestic demand. One relates to the size of the domestic market. According to equation (2), the increase in the sum of C, I and G must be sufficiently large to compensate for the decline in the trade surplus caused by a fall in exports without having a negative impact on growth. With Δ denoting changes, this can be expressed as:

$$\frac{\Delta(C + I + G)}{Y} = -\frac{\Delta(X - M)}{Y} \tag{5}$$

[2] This relationship is subject to a number of assumptions, including constant relative prices (or the real exchange rate), and the Marshall-Lerner condition being just satisfied (i.e. the sum of the price elasticities of demand for imports and exports equals unity), so that the growth of exports is solely determined by the growth of world income. Thirlwall (2013: 87–90) concludes from a review of a "mass of studies applying the model in its various forms to individual countries and groups of countries" that the "vast majority of studies support the balance of payments constrained growth hypothesis for two basic reasons. The first is that it is shown overwhelmingly that relative price changes or real exchange rate changes are not an efficient balance of payments adjustment mechanism either because the degree of long-run change is small, or the price elasticity of exports and imports is low. … The second reason why the model fits so well is that even if balance of payments equilibrium is allowed … there is a limit to the current account deficit to GDP ratio that countries can sustain". For further discussion of the debate about this relationship, see McCombie (2011). For a full discussion about how Thirlwall's law relates to Kaldorian growth theory and about the robustness of its basic hypothesis to extensions such as taking account of relative price dynamics, international financial flows, multi-sector growth, cumulative causation, and the interaction between the actual and potential rates of growth, see Setterfield (2011).

[3] For an extension of Thirlwall's law to a multi-sectoral economy, see Araujo and Lima (2007) and Razmi (2011).

The second challenge concerns the risk that a switch in growth strategy will rapidly become unsustainable by triggering a surge in imports and ensuing balance-of-payments problems.[4] Differences in the import intensity of the different components of aggregate demand imply that the relative importance of C, G and I determines the evolution of imports. Rewriting equation (1), with m_C, m_I, m_G, and m_X denoting the import intensity of C, I, G, and X, leads to

$$Y=(C-m_C C)+(I-m_I I)+(G-m_G G)+(X-m_X X) \tag{6}$$

which shows that these differences imply that changes in the composition of a country's aggregate demand will cause significant changes in imports, which occur even if the level of national aggregate demand does not change. Statistical evidence indicates that in most countries the import intensities of exports and investment exceed that of consumption, and that the import intensity of household consumption exceeds that of government consumption, since the latter includes a large proportion of non-tradables, such as services (e.g. Bussière et al., 2013). A variation in the import contents of the different elements of aggregate demand implies that changes in the trade balance have different indirect impacts on imports and growth.[5] As noted by McCombie (1985: 63), "an increase in exports allows other autonomous expenditures to be increased until income has risen by enough to induce an increase in imports equivalent to the initial increase in exports."

Developing countries will most likely need to maintain some export growth in order to finance the imports of primary commodities and capital goods required for ongoing urbanization and for an expansion of domestic productive capacity. In the current context, maintaining some export growth may be more feasible for exporters of primary commodities, especially energy. For developing countries exporting manufactured goods to developed countries, it will depend on the evolution of import demand in developed countries, but would probably also require seeking other destination markets, mainly in developing countries where consumption expenditure is increasing. Maintaining export growth could also be achieved by the inclusion of more sophisticated goods in the export basket, such as through upgrading in global value chains, but much of the scope for doing so will also depend on the evolution of import demand in developed countries. Indeed, it must be borne in mind that from the perspective of the global economy, any country's export growth must be absorbed by a commensurate growth in other countries' imports.

The third challenge relates to the fact that, unlike exports, the bulk of the other components of aggregate demand (i.e. household consumption expenditure, government expenditure and investment) is not autonomous, but induced by income (e.g. $C=cY$, where c is the marginal propensity to consume). This means that for a shift in growth strategy to be sustainable, an initial increase in expenditure in the, usually small, autonomous segments of C, G and I must trigger an increase in expenditure in those segments of C, G and I that are induced by income, and income itself must be generated in the process.

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[4] While induced imports may be the main factor in the leakage identified in equation (3), savings and taxation also play a role. Savings cause households' expenditure to be lower than their total income. Households' net acquisition of financial assets and other forms of wealth reduces the amount of disposable income that constitutes consumption expenditure. However, depending on the age structure of the population and the availability of social security systems, especially for senior citizens, this reduction is likely to be small for most individuals, especially those belonging to middle-class households. Data on the distribution of household wealth indicate a high concentration, with the share of the top 10 per cent of adults holding over two thirds of global wealth (Davies et al., 2010). Moreover, accumulated wealth is usually used to finance housing, rather than durable goods consumption.

[5] The composition of private consumption between tradable goods and non-tradable services also plays a role. Workers in the latter sector demand more imports but do not contribute to exports, with ensuing adverse effects on the balance of payments.

The following three sections concentrate of the first two challenges, while the remainder of this section discusses how the autonomous segments of the various components of domestic demand can be increased, and how such increases can create income that, in turn, would enable growth in those segments that are a function of income.

Some part of government expenditure is autonomous, and can be financed by issuing government bonds or increased taxation of higher income groups. However, much of government expenditure and revenue is endogenous (such as payments for unemployment benefits and tax receipts), and is therefore a function of income. The income effects of an increase in government expenditure, in turn, depend on its multiplier effects and on the degree of internationally coordinated fiscal expansion. There is an ongoing debate about the size of the multiplier effect, but it is generally agreed to be higher in a slump than in more normal times (Blanchard and Leigh, 2013). In 2008–2009, simultaneous fiscal expansion played a crucial role in compensating for the adverse growth effects of declining export opportunities for developing countries. However, these countries may not have the fiscal space to adopt such measures a second time (or even on a continuous basis over a given period). Moreover, there are questions as to how much of a country's fiscal expansion undertaken individually spills over to other countries through rising imports. Coordinated fiscal expansion would greatly bolster the growth prospects of all participating countries, but this requires considerable solidarity among States and peoples, which is unlikely in the foreseeable future.

Investment also has an autonomous component, particularly public investment in infrastructure and housing. However, the bulk of investment is endogenous and determined by the opportunity cost of capital. This is mainly a function of the short-term interest rate set by the central bank and expectations about future growth of sales. If entrepreneurs expect a strong and sustained increase in demand for what they produce, they will engage in large investment expenditures financed, for example, through the creation of liquidity by commercial banks. This means that a country's overall share of investment in GDP must be compatible with its overall share of consumption in GDP to achieve a balanced expansion of domestic demand. If investment continuously outpaces consumption, the productive capacity created will be underutilized, which will depress revenues and, to the extent that investment is debt financed, it will create problems in the domestic financial system.

Turning to the third component of domestic demand (i.e. household consumption expenditure), the autonomous part of consumption could be financed by borrowing from abroad, which would appear as an external deficit in the national income accounting identity (equation 1), or through various possibilities that would reduce leakage by increasing the size of s (=1 minus the marginal propensity to consume out of income) in equation (2): a reduction of spending or savings by another class of households, for example by a redistribution of income (through taxes or transfers) from high-income to middle-class households, borrowing from domestic lenders, and/or improved social security systems.

Financing the autonomous part of consumption can also be achieved if a sizeable group of consumers is able to delink, at least temporarily, consumption from current income. Such a delinking might occur, for example, in anticipation of a higher future income or for reasons of social interdependencies in consumption. Both these factors may well be considered key characteristics of middle-class households. Usually, low-income households will not have the discretionary income or the savings required to engage in spending unrelated to current income, even if tax policies and government transfers to low-income households affect consumption spending by this category. High-income households are likely to prefer spending on conspicuous, luxury goods, and their number will generally be smaller than that of middle-class households. Moreover, generally it is middle-class households that seek access to consumer credit which finances purchases of durable consumer goods. An initial provision of the purchasing power required for accelerated consumption expenditure through sources delinked from wage income would also limit any adverse consequences for international competitiveness that can be due to a shift from an export-oriented growth strategy, which has often relied on low wages, to a growth strategy that relies more on private consumption. However, to be sustainable, this process will eventually require higher wage income. Indeed, boosting domestic purchasing power through the creation of jobs and income is an

essential condition for a shift from an export-oriented to a more domestic-consumption-oriented growth strategy to be sustainable, as it will boost the non-autonomous component of household consumption.[6]

III. CONSUMER PREFERENCES AND DEMAND ACCELERATIONS

This section discusses the principles of satiability and of a hierarchy of needs in consumer preferences to estimate the relationship between per capita income and household consumption expenditure. Demand-side mechanisms, which reflect changes in the patterns of demand as per capita income rises, have constituted only a relatively small part of the larger search for the stylized facts in economic development. The declining share of aggregate consumer spending on food (i.e. an effect known as "Engel's law") is usually considered as the most notable feature of such demand-side effects. Attempts to generalize Engel's law by enlarging the scope of analysis to more categories of expenditure have often focused on changes in the basket of necessities (such as food, housing and clothing), while treating non-necessities (such as durable goods) as a residual of little importance (e.g. Houthakker, 1957; Chenery, Robinson and Syrquin, 1986). Moreover, these studies assume that a country's pattern of consumption is borne out by a representative consumer that acts on the basis of a postulated linear expenditure system which, inter alia, implies that there are no inferior goods and that the Engel curves are linear (Brown and Heien, 1972). These assumptions were made for technical and econometric reasons, i.e. to allow for "consistent aggregation of demand equations over consumers" (e.g. Lluch, Powell and Williams, 1977: 8). Another reason may have been that the most influential among these studies (e.g. Houthakker, 1957; Lluch, Powell and Williams, 1977) examined data of the 1950s and 1960s when mass consumption of non-necessities was a relatively new phenomenon that was unlikely to exert a significant impact in time-series estimations even in the most affluent countries at the time.

Using the concept of a representative consumer is less helpful when income distribution is taken into account. For example, socioeconomic class is likely to be a very important determinant of individuals' consumption patterns (e.g. Lluch, Powell and Williams, 1977). People who are better off dispose of discretionary income and can shift their consumption pattern away from only necessities.[7] This shift in consumption patterns may be based on a preference structure related to a hierarchy of needs (Maslow, 1954). It implies that consumers will start spending beyond goods that only satisfy their basic, or subsistence, needs once their income exceeds a certain threshold. The principle of a hierarchy of needs implies that needs are separable. Separability, in turn, severely limits the degree of substitutability between goods in different goods categories. As a result, under such a preference pattern changes in real income and in consumer preferences are the predominant determinants of changes in consumer demand, while price substitution effects are confined to goods with similar characteristics.

Another important assumption associated with such a preference pattern is that consumer demand for any good approaches a saturation point, so that demand growth will slow down and eventually cease as more and more households reach the levels of income that mark saturation points. Assuming that needs are separable and satiable implies the existence of non-homothetic consumer preferences, i.e. the assumption that changes in income will change the proportion of goods demanded in the overall consumption bundle.

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[6] A strict interpretation of Thirwall's law would consider C, G and I as having no autonomous segments. This means that shifting from export- to consumption-led growth would require an increase in households' debt levels. Since 2008, some developing countries have experienced a significant increase in the level of household debt as a share of GDP. However, spurring domestic demand by facilitating access to consumer credit tends to be risky, as amply demonstrated by recent experiences in a number of developed countries.

[7] Disposing of discretionary income to satisfy desired consumption beyond basic needs is not necessary if the life-cycle theory of consumption holds. According to this approach to consumer spending (e.g. Friedman, 1957), current consumption is permanently delinked from current income as the only constraint on consumption expenditure is consumers' total life-time resources, i.e. to remain solvent throughout their life time.

Consumer preferences may change as income rises in response to subjective wants influenced by socially acquired desires for status and recognition by specific groups of other consumers.

Social interdependencies in consumption that account for changes in consumer behaviour may relate to so-called "bandwagon effects", where an individual's consumption demand for a specific good has a positive correlation with the number of peers owning that good, or to so-called "Veblen effects" where conspicuous consumption is undertaken, often for luxury items, that distinguishes a consumer from ordinary people.[8] The interplay between conspicuous consumption and bandwagon effects points to very rapid growth in consumer expenditure for specific items when a large number of people cross a threshold of per capita income that provides sufficient discretionary income to afford a specific consumer good (Cowan, Cowan and Swann, 2004). The responsiveness of consumer demand to changes in the size of discretionary income that are the result of such interpersonal linkages may receive a further boost by the fact that crossing a certain income threshold allows individuals to access consumer credit. In any case, such responsiveness is reflected in changes in product-specific income elasticities that accompany per capita income growth.

The recognition that the pace of per capita income growth affects the evolution of product-specific consumption expenditure and that this effect is subject to two thresholds – a lower threshold where consumers start engaging in discretionary spending and an upper threshold where their demand approaches saturation – may be extrapolated from the national to the global level with a view to exploring whether consumers in richer countries can afford, and indeed want, to spend more on specific consumer items. This framework is based on the assumption that the S-shaped structure of consumer spending resulting from the two thresholds applies to all countries but that country-specific characteristics cause deviations from cross-country averages.[9] Such characteristics may be related to a wide range of slowly changing factors of very different kinds, including the geographical size and degree of urbanization of a country, as well as demographic factors such as population age and density, but also to factors that may respond more rapidly to economic policies, such as income distribution and the role of consumption, relative to exports, in a country's growth strategy.

An econometric estimation of the relationship between consumption expenditure and per capita income may build on Dargay and Gately (1999), IMF (2005), and Dargay, Gately and Sommer (2007) who estimate the relationship between vehicle ownership and per capita income. The present analysis extends these studies in two ways. Firstly, it estimates the relationship between passenger cars and income for a different country sample and a longer time period. Secondly, it broadens the scope of the analysis by looking not just at vehicle ownership but four product categories (non-durable consumer goods, semi-durable consumer goods, durable consumer goods, and services) and seven individual goods (audio-visual products, food and non-alcoholic beverages, footwear, furniture, garments, household appliances, and passenger cars).

In line with the mentioned studies, the analysis diverges in two ways from that in, for example, Lluch, Powell and Williams (1977) and Syrquin (1988). First, it uses per capita income, rather than total household expenditure, as the independent variable. Doing so allows applying the results to distributional issues, as well as the size of the middle class, which is usually considered as driving mass consumption and defined on the basis of per capita income. Second, it uses expenditure levels, rather than expenditure shares, as the dependent variable. This allows for a better examination of the pace and the direction of

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[8] These effects on consumption behaviour from peers and rivals are distinct from those relating to the consumer's own consumption history, which often create habit persistence and inertia in consumption patterns, especially in advanced economies (see, e.g., Carroll, Slacalek and Sommer, 2011).

[9] Matsuyama (2002: 1037) uses an S-shaped curve to illustrate penetration rates, i.e. the fraction of households using a particular consumer good, noting that this "pattern is so similar across many industrialized countries that the penetration rates of representative goods have become the popular yardstick for comparing the standards of living across societies. One key feature of this pattern is that not only does the market for each consumer good take off, but each takeoff is followed by one after another." Annex 1 discusses issues of functional form relating to the following econometric estimation.

change of household consumption expenditure, as well as of the size of ensuing business and investment opportunities.

The Gompertz function used to estimate the relationship between consumption expenditure (*C*) and per-capita income (*PCI*) can be expressed as:

$$C_t = \gamma e^{\alpha e^{\beta PCI_t}} \tag{7}$$

with the related income elasticity of demand (*σ*) expressed as

$$\sigma_t = \alpha \beta PCI_t e^{\beta PCI_t} \tag{8}$$

where *γ* is the saturation level and *α* and *β* are parameters that define the shape of the function. The saturation level is assumed to be the same for all countries (as in Dargay and Gately, 1999), though allowed to vary across products.[10] The value of *α* determines the shape of the curve at low levels of per capita income and, hence, the maximum income elasticity of consumption spending.[11] The value of *β* determines the income level where the common maximum elasticity is reached: the smaller *β* in absolute value, the greater the per-capita income at which the maximum income elasticity occurs. Given the nature of the functional form, the income elasticity of consumption expenditure is positive at all levels of income, but varies with per capita income: it increases from zero at PCI=0 to a maximum, attained at PCI=-1/*β*, and then declines asymptotically to zero as saturation is approached. The model is estimated using iterative least squares.

The estimation for passenger cars is based on volume data, i.e. registered units of passenger cars, and refers to a sample of 52 countries and the period 1950–2011. All other estimations are based on value data, i.e. consumption expenditure measured in US-dollar at constant 2011-prices, and refer to a sample of 84 countries and the period 1990–2011. Per-capita income is measured in real international dollar, i.e. evaluated at purchasing power parities, at constant 2005-prices. The estimations use pooled cross-country time series.[12]

The regression results, presented in table 1, suggest that saturation (reflected in the coefficient on *γ*) for non-durables occurs at significantly higher levels of per capita income than that for either semi-durables or durables. The reason is that non-durables include necessities, such as food and non-alcoholic beverages (for which the level of saturation is about one third that of non-durables taken as a group), but

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[10] In their study on vehicle ownership, Dargay, Gately and Sommer (2007: 151) assume the United States to have the maximum saturation level while those of other "countries that are more urbanized and more densely populated than the USA will have lower saturation levels." The relatively short period of time for which time-series data are available for consumption expenditure on goods other than vehicles prevents calculating country-specific saturation levels and, hence, adopting a similar relaxation of the parameter assumptions.

[11] Dargay, Gately and Sommer (2007: 155) note that the maximum elasticity may be calculated "by setting the derivative of the … elasticity with respect to GDP equal to zero, solving for the value of GDP where the elasticity is a maximum and replacing this value of GDP=-1/*β* in the original elasticity formula."

[12] As noted by Dargay, Gately and Sommer (2007: 153–154): "The rationale for pooling time-series data across countries is the following. Although it is possible, in theory, to estimate a separate vehicle ownership function for each country, the short time periods and relatively small range of income levels that are available for each country make such an approach untenable. Reliable estimation of the saturation level requires observations on vehicle ownership which are nearing saturation. Analogously, estimation of the parameter alpha, which determines the value of the Gompertz function at the lowest income levels, necessitates observations for low income and ownership levels. Thus it would not be sensible to estimate the saturation level for low-income countries separately, because vehicle ownership in these countries is far from saturation. Similarly, one could not estimate the lower end of the curve, i.e. the parameter alpha, on the basis of data only for high-income countries with high vehicle-ownership, unless historic data were available for many years in the past. For these reasons, we use a pooled time-series cross-section approach, with all countries being modeled simultaneously."

Table 1

**The relationship between per capita income and consumption spending:
summary of regression results**

	Coefficients on independent variables			Number of observations	R-squared	Memo items: Level of per capita income at which elasticity peaks	Level of expenditure at which elasticity peaks
	γ	α	β				
Product categories							
Non-durables[a]	9 659 (286.7)	-3.049 (0.04)	-0.066 (0.00)	1 656	0.88	15 044	3 140
Semi-durables[a]	3 287 (122.3)	-4.200 (0.09)	-0.068 (0.00)	1 656	0.87	14 808	710
Durables[a]	4 805 (171.3)	-4.595 (0.10)	-0.068 (0.00)	1 656	0.89	14 680	888
Services[a]	29 568 (1390.0)	-4.727 (0.06)	-0.052 (0.00)	1 656	0.93	19 146	5 194
Products							
Food and non-alcoholic beverages[a]	3 255 (72.4)	-2.288 (0.05)	-0.084 (0.00)	1 656	0.79	11 940	1 403
Alcoholic beverages and tobacco[b]	1 039 (28.0)	-3.833 (0.14)	-0.094 (0.00)	1 571	0.79	10 611	254
Garments[a]	1 357 (48.5)	-3.996 (0.11)	-0.075 (0.00)	1 656	0.82	13 379	312
Footwear[c]	258 (9.3)	-2.896 (0.10)	-0.084 (0.01)	1 634	0.67	11 868	89
Household appliances[d]	258 (6.72)	-3.683 (0.11)	-0.089 (0.00)	1 568	0.82	11 192	67
Furniture[a]	728 (34.18)	-5.026 (0.22)	-0.078 (0.00)	1 656	0.76	12 788	115
Audio-visual products[e]	2 699 (300.2)	-5.401 (0.08)	-0.034 (0.00)	1 678	0.85	29 141	370
Pharmaceuticals[f]	46 253 (90 135.6)	-7.056 (1.90)	-0.011 (0.00)	1 590	0.67	92 259	3 450
Memo item:							
Passenger cars[g]	507 (6.36)	-5.131 (0.14)	-0.113 (0.00)	3 008	0.874	8 881	n.a.

Source: Author's calculations, based on data from Penn World Tables, Euromonitor, United Nations Statistical Yearbook, and *UnctadStat*.

Note: For the country sample used for these regressions, see annex 2. All coefficients significant at the 1 per cent level, except the coefficient on γ, which is not significant at conventional levels of significance. Standard errors in parentheses.

a The country sample used for this regression excludes Hong Kong (China), Kuwait, Norway, Qatar, Singapore, Switzerland, United Arab Emirates which are statistical outliers.

b The country sample used for this regression excludes Bahrain, Hong Kong (China), Iran (Islamic Republic of), Kuwait, Norway, Qatar, Saudi Arabia, Singapore, Switzerland, Turkmenistan, United Arab Emirates which are statistical outliers.

c The country sample used for this regression excludes Costa Rica, Hong Kong (China), Kuwait, Norway, Qatar, Singapore, Switzerland, United Arab Emirates which are statistical outliers.

d The country sample used for this regression excludes Hong Kong (China), Israel, Japan, Kuwait, New Zealand, Norway, Qatar, Singapore, Switzerland, United Arab Emirates, Uruguay which are statistical outliers.

e The country sample used for this regression excludes Hong Kong (China), Kuwait, Qatar, Singapore, Switzerland, United Arab Emirates which are statistical outliers.

f The country sample used for this regression excludes Australia, Hong Kong (China), Kuwait, Norway, Qatar, Singapore, Switzerland, United Arab Emirates, United States, Uruguay which are statistical outliers.

g For the country sample used for this regression, see annex 2.

also pharmaceuticals, for which demand approaches saturation at levels of per capita income that even exceed that for services.

The results also point to significant variation in the shape of the Gompertz function at both low and high levels of per capita income, as reflected by differences in the size of the coefficients on α and β for the different products. The relatively low absolute value of the coefficient on α for food and non-alcoholic beverages is as expected for consumption of necessities. This low value indicates a relatively low significance of a lower-bound per capita income threshold for engaging in expenditure for these goods. This contrasts to the relative high absolute value of the coefficient on α for passenger cars, audio-visual products and pharmaceutical. It indicates that expenditure for these goods requires the availability of discretionary income and that, once such thresholds are attained, expenditure increases rapidly.

The large size of the absolute value of the coefficients on both α and β observed for passenger cars is particularly noteworthy because it indicates that such rapid expenditure increases occur at relatively low levels of per capita income, as also indicated by the fact that the income elasticity of demand for passenger cars peaks at a level of per capita income slightly below 9,000 international dollars. This contrasts with the relatively low absolute value of the coefficient on β for audio-visual products and pharmaceuticals, indicating that for these products the income of elasticity of demand peaks at rather high levels of per capita income.

The results for the broad product categories indicate that the income elasticity of demand for services exceeds that for any of the three goods categories and that it peaks at higher levels of per capita income. This finding also conforms to expectations, as services are generally demanded by more affluent consumers. Within the three goods categories, the results for durables indicate a relatively high income elasticity of demand whose peak is reached at relatively low levels of per capita income. These findings make durable consumer goods a particularly interesting category for the purposes of this paper.

IV. PER CAPITA INCOME GROWTH AND THE INCOME ELASTICITY OF DEMAND

This and the following section examine whether growth in consumer spending in developing countries could be large enough to compensate for the widely expected decline in their export growth stemming from lower demand growth in developed countries. It focuses on durable and semi-durable consumer goods. Even though, on average, each of these two product categories account for only about 10 per cent of countries' total consumption expenditure, they include those products (such as apparel, audio-visual products, automobiles, footwear, household appliances, etc.) whose exports to developed countries boosted developing country growth prior to the crisis and whose production has historically supported technological upgrading and structural change.

A. *The non-linear relationship between per capita income and consumer expenditure*

A first step towards assessing the potential evolution of household consumption in developing and transition economies relative to that in developed economies is to examine expenditure for specific consumer goods undertaken by countries at different levels of per capita income. Such cross-country evidence indicates that the relationship between expenditure on durable consumption goods and per capita income is S-shaped, as shown in figure 1 for 2011, which supports the findings of the regression analysis in the previous section. Expenditure on durable consumption goods grows relatively slowly at very low levels of per capita income, i.e. when a country's median consumer has little, or no, discretionary income that would allow purchasing products other than necessities. In 2011, this was the case in, for example, Nigeria, Pakistan, the Philippines, Uzbekistan and Viet Nam. Expenditure for durable consumer goods grows faster than per capita income from about 4,000 dollars to about 35,000 dollars (measured at

Figure 1

The relationship between per capita income and consumption expenditure on durable goods, 1990–2011, cross-country average and selected individual economies
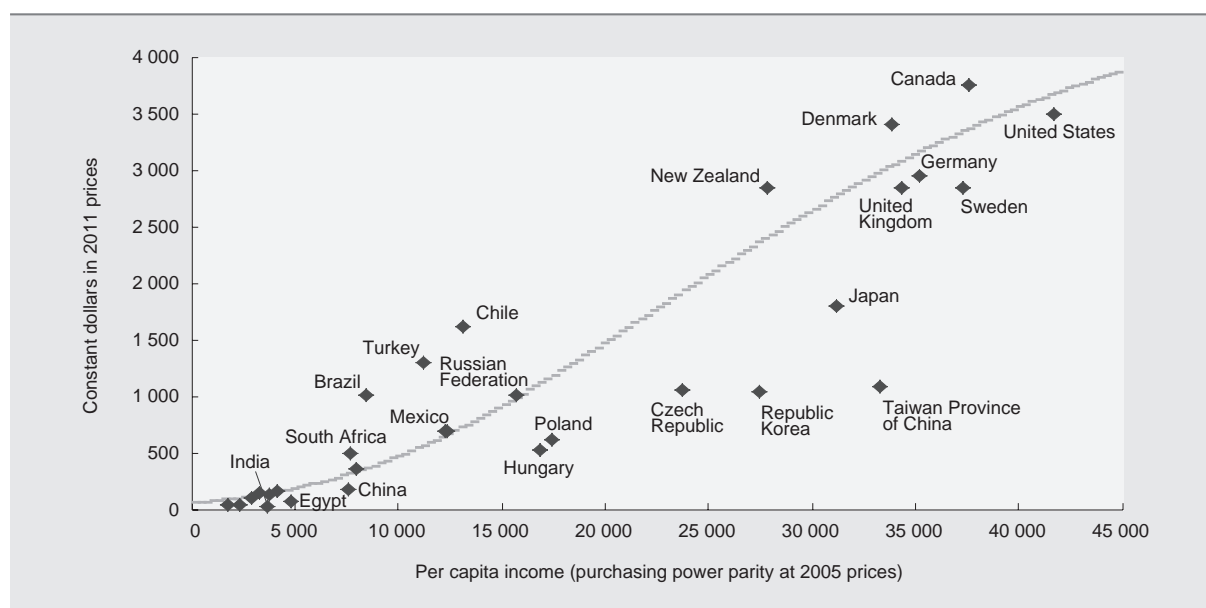
Source: Author's calculations, based on data from Penn World Tables, UNCTAD and Euromonitor.

constant 2005 prices and expressed in terms of purchasing power parity), i.e. a range of daily incomes of about 10–100 dollars. Many countries, comprising very populous ones, that have been growing rapidly over the past few years fall within this bracket. This group includes, Brazil, China, Egypt, Indonesia, Malaysia, Mexico, the Russian Federation, South Africa and Turkey, while, in 2011, the levels of per capita income in India and Morocco were just below the threshold of 4,000 dollars. Expenditure growth for durable consumer goods relative to per capita income moves back to below unity at higher income levels. The economies concerned include some of those that rapidly industrialized in the 1970s–1990s, including Hong Kong (China) and Singapore, while the levels of per capita incomes in the Republic of Korea and Taiwan Province of China are slightly below the threshold of 36,000 dollars. Expenditure reaches its maximum levels, i.e. saturation, at the highest levels of income, such as reflected in the figure for a number of developed countries, such as the United States.

Similar evidence, but based on time-series data for selected economies and the period 1950–2011, for ownership of passenger cars further highlights the non-linear relationship between per capita income and consumption expenditure (figure 2). Spending trajectories are generally not subject to abrupt changes. However, a sharp drop in car registrations in the United States accompanied the drop in that country's per capita income following the onset of the current crisis in 2008.

The evidence in both figure 1 and figure 2 reflect sometimes substantial deviation of country-specific expenditure levels from the cross-country averages, indicated by the S-shaped curve, where many Asian economies are below the cross-country benchmark, while many economies in Latin America are above that line. However, it is well known that, over the past three decades, the contribution of consumption growth to total output growth has consistently been larger in Latin American countries, such as Brazil, than in countries in Asia, such as in the Republic of Korea and, later China. These latter countries have seen a much larger growth contribution from exports than from consumption, particularly during the first decade of the 2000s (World Bank, 2011: 28–30) when in China the trade surplus as a share of GDP

Figure 2

The relationship between per capita income and passenger car registrations, 1950–2010, cross-country average and selected individual economies

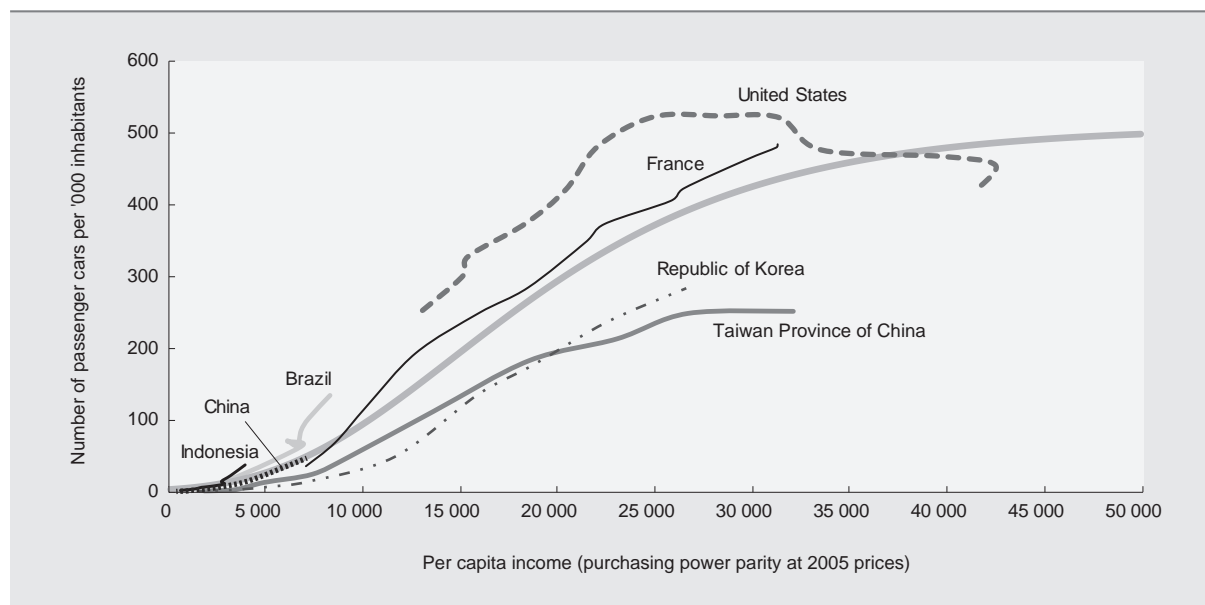*Source:* Author's calculations, based on data from Penn World Tables, *United Nations Statistical Yearbook* (various issues) and Euromonitor.
 Note: Data shown at five-year intervals.

increased from 2.4 per cent in 2000 to 8.8 per cent in 2007.[13] Similar developments could be observed for some advanced economies, such as Germany. Over the past two decades, this country recorded export growth that significantly exceeded that of either household consumption expenditure, imports or GDP.

To get further insight on the relationship between per capita income and consumption expenditure, it is useful to examine summary statistics for the group of countries on which the econometric estimates just mentioned are based. Regarding advanced economies, the statistics indicate the sizeable growth in expenditure for durable consumer goods in the United States during the period 1990–2007, as well as the subsequent substantial fall (table 2). The statistics also show that during the period 1990–2007, expenditure on durable consumer goods in Japan and the Euro-area, especially Germany, grew considerably less than per capita income, which may reflect these countries' strong export orientation.

In China, the pace of expenditure on durable consumer goods considerably accelerated during the period 2007–2011, pointing to some internal rebalancing. During the period 1990–2007 such expenditure was growing less than per capita income and the share of household consumption in GDP declined to about 35 per cent. While expenditure on durable consumer goods during the period 2007–2011 held up well in a range of other Asian developing countries (such as Indonesia, the Republic of Korea, and Thailand), a similar acceleration as in China can be observed for Malaysia and Turkey, as well as, especially, for Brazil and the group of other large Latin American economies (including Argentina, the Bolivarian Republic of Venezuela, Chile, Colombia and Peru). The difference in the pace between expenditure on durable consumer goods and per capita income during the period 1990–2011 was largest in the Russian Federation, probably mirroring pent-up demand prior to the beginning of economic transition. By contrast, the pace of expenditure on durable consumer goods in Nigeria and a group of economies in West Asia is

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[13] The share in GDP of China's trade surplus declined to 3.5 per cent in 2011, largely reflecting a decline in external demand.

Table 2

**The relationship between per capita income and consumption expenditure,
selected economies, 1990–2011: descriptive statistics**

	Per capita income	Expenditure on durable consumer goods	Per capita income growth		Growth of expenditure on durable consumer goods		Share of household consumption in GDP	Per capita consumption expenditure
			Memo items:					
	Average 1990–2011	*Average 1990–2011*	*1990– 2007*	*2007– 2011*	*1990– 2007*	*2007– 2011*	*2007–2011*	*2011*
	(Constant internat. dollar)	*(Constant US dollar)*	*(Per cent)*		*(Per cent)*		*(Per cent)*	*(US dollar)*
Developed countries and country groups								
United States	37 932	3 638	2.2	-1.1	2.1	-3.4	70.6	33 575
Japan	29 997	2 280	0.7	-1.3	-1.3	-1.4	58.3	27 161
Germany	30 682	3 296	1.3	0.5	-0.9	-0.8	57.0	23 915
Core Euro area, excl. Germany	30 544	2 658	2.0	-0.8	1.1	-2.2	53.5	24 264
Transition economies								
Russian Federation	10 877	443	1.5	1.8	9.5	1.2	51.0	6 400
Developing economies								
Asia								
China	3 508	74	9.1	8.5	9.0	12.1	35.3	2 134
India	2 162	19	4.3	6.4	4.2	0.3	57.6	892
Indonesia	3 033	98	2.0	5.1	5.0	3.6	59.9	1 981
Malaysia	9 367	412	3.4	1.8	3.4	5.5	47.2	5 043
Philippines	2 620	124	1.4	2.2	2.7	-1.4	73.5	1 703
Republic of Korea	19 345	857	4.2	2.6	2.6	2.5	53.9	10 810
Taiwan Province of China	22 974	978	4.2	3.2	2.3	-0.3	59.3	11 721
Thailand	6 305	303	2.4	1.6	1.8	1.7	54.4	2 898
Turkey	8 429	1 056	2.4	1.7	-1.1	3.1	71.0	7 755
Western Asia (5)	42 484	1 520	1.8	0.2	0.3	-5.7	35.6	n.a.
Latin America								
Brazil	7 001	654	1.2	2.0	3.5	5.9	60.3	7 573
Mexico	10 880	563	1.6	-0.6	1.5	0.9	65.0	6 811
Other countries (5)	7 853	411	1.9	2.2	2.4	4.7	59.6	5 720
Africa								
Nigeria	1 355	45	2.7	-2.8	-0.3	-5.0	68.2	775
South Africa	6 181	302	2.0	0.6	6.5	2.5	61.0	4 652
Memo item:								
Major manufactured goods exporters (6)	12 063	531	4.1	2.9	3.4	3.7	52.5	6 761

Source: Author's calculations, based on data from Penn World Tables, Euromonitor and *UnctadStat*.

Note: LA-5 includes Argentina, Chile, Colombia, Peru and Venezuela (Bolivarian Republic of). Western Asia 5 includes Bahrain, Kuwait, Qatar, Saudi Arabia and United Arab Emirates. Core Euro-area excluding Germany includes Austria, Belgium, Finland, France, Italy and the Netherlands. The group of major manufactured goods exporters includes China, Malaysia, Mexico, the Republic of Korea, Taiwan Province of China, and Thailand.

substantially smaller, and often even negative, than per capita income. The extremely low consumption expenditure levels in the latter group of countries (including Bahrain, Kuwait, Qatar, Saudi Arabia and United Arab Emirates) may indicate that consumers in these countries have significantly lower saturation levels than consumers elsewhere. In statistical terms, these countries are outliers and were excluded from the regression exercise discussed above.

Finally, the evidence shown in table 2 (last column) indicates that, in 2011, the level of per capita consumption expenditure in the large Asian developing economies (such as China, India and Indonesia) was not even one tenth, and that even in the large economies in Latin America it is only about one fourth, that in the advanced economies. This means that even considering the much larger size of population in these developing economies, absolute levels of consumption spending in advanced economies remains significantly larger. However, this could change rapidly, as discussed in the remainder of this section.

### B. Changes in the income elasticity of demand as per capita income increases

A second step towards assessing the potential size of consumer demand in developing and transition economies relative to that of advanced economies emphasizes changes in the income elasticity of demand as per capita income increases. The related empirical evidence illustrates that crossing the lower income threshold mentioned in the previous section leads to a rapid increase in the income elasticity of demand, while satiation related to the upper threshold makes the income elasticity to asymptotically revert back to zero. But the evidence also points to substantial variation in the income elasticity of demand both across broad consumer goods categories and individual consumer goods and across levels of per capita income. Looking first at variation across products, using the results of econometric estimations shown in table 1 above to determine the evolution of the income elasticity of demand as per capita income rises, figure 3 indicates that the income elasticity of demand for food and non-alcoholic beverages, which satisfy basic needs, is below unity and significantly lower than that for semi-durable goods (such as footwear and garments), durables (such as furniture, household appliances, passenger cars, or audio-visual products) and services.[14] The differences across these product categories regarding the speed with which the related elasticities converge towards zero as per capita income rises indicate differences in the level of per capita income at which demand for these products approaches saturation.

Perhaps most importantly, the evidence based on these cross-country averages shows that advanced economies (such as Germany, Japan and the United States, whose per capita incomes are indicated through the vertical lines on the right-hand side of the figure) have reached levels of per capita income at which further income growth is associated with a decline in the income elasticity of demand. The opposite holds for developing countries (such as Brazil, China, India and Indonesia, whose per capita incomes are indicated through the vertical lines further to the left in the figure). These differences imply, for example, that, at current levels of per capita income, income growth of one per cent in the United States raises per capita demand for durable consumer goods by about 0.8 per cent, while the same rise in income in China boosts per capita durables demand by about 1.4 per cent. By contrast, the same rate of income growth raises the per capita demand for services at an almost identical pace in the two countries, i.e. by about 1.2 per cent (figure 3).

The annual expenditure level which is associated with the maximum income elasticity of demand for durable consumer goods is about $900, which corresponds to a level of per capita income of about 14,700 international dollars, i.e. slightly above the 2011-level in Malaysia and Mexico, roughly double that in Brazil and China, about four times the level in India and Indonesia, and about one-third that in the United States.

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[14] See annex 2 for details on the composition of these product categories.

Figure 3

The relationship between per capita income and the income elasticity of demand, selected consumer good categories
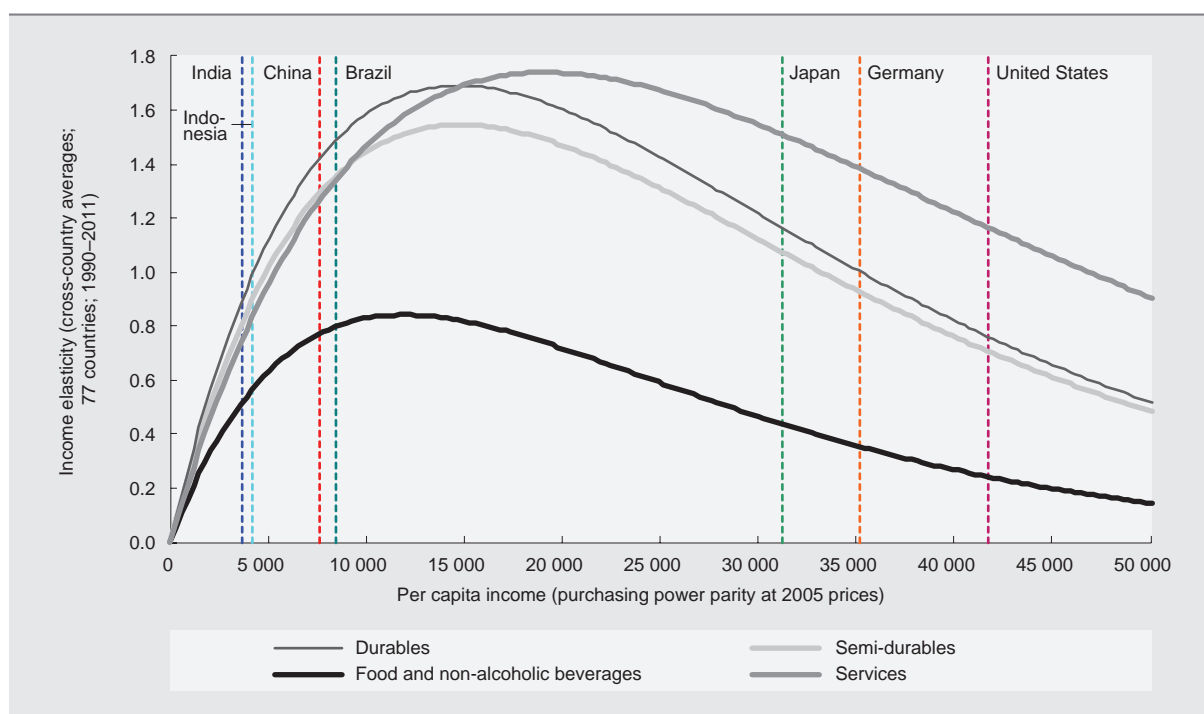
Source: Author's calculations, based on data from Penn World Tables, *UNCTADstat* and Euromonitor.

An examination of the income elasticities for six major individual consumer goods (figure 4) reveals that the peak of the income elasticity of demand is lowest for footwear, followed by household appliances, garments, furniture, passenger cars and audio-visual products, whose maximum elasticity is almost double that for footwear.[15] It is also interesting to note that for all of these six goods, except audio-visual products, the income elasticity of demand peaks at a level of per capita income in a range spanning about 8,800–13,500 dollar, expressed in terms of purchasing power parity at 2005 prices. These levels of per capita income correspond to the middle part of the income ranges in widely used definitions of "middle class", as discussed below.

Another notable feature is the especially rapid increase in the income elasticity of demand for passenger cars and the fact that its comparatively high peak is attained at a relatively low level of per capita income. This may indicate that car ownership is a source of prestige for a sizeable proportion of consumers. The evidence for cars contrasts with the very high level of per capita income (almost 30,000 international dollars) which marks the peak of the income elasticity of demand for audio-visual products. This latter category includes products, such as smart phones, which were invented during the period on which the analysis is based. As a result, the shape of the curve for the income elasticity of demand for audio-visual products shown in figure 4 could well reflect the beginning of a product cycle. If this is the case, these products will experience rapidly declining prices and an associated rapidly increasing demand even from consumers at levels of income significantly below 30,000 international dollars.

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[15] This examination implicitly assumes that each individual has a well-defined priority over goods and that different individuals have an identical ordering of goods, so that "the order in which goods are consumed is independent of the relative prices over the relevant range" (Matsuyama, 2002: 1063).

Figure 4

The relationship between per capita income and the income elasticity of demand, selected consumer goods
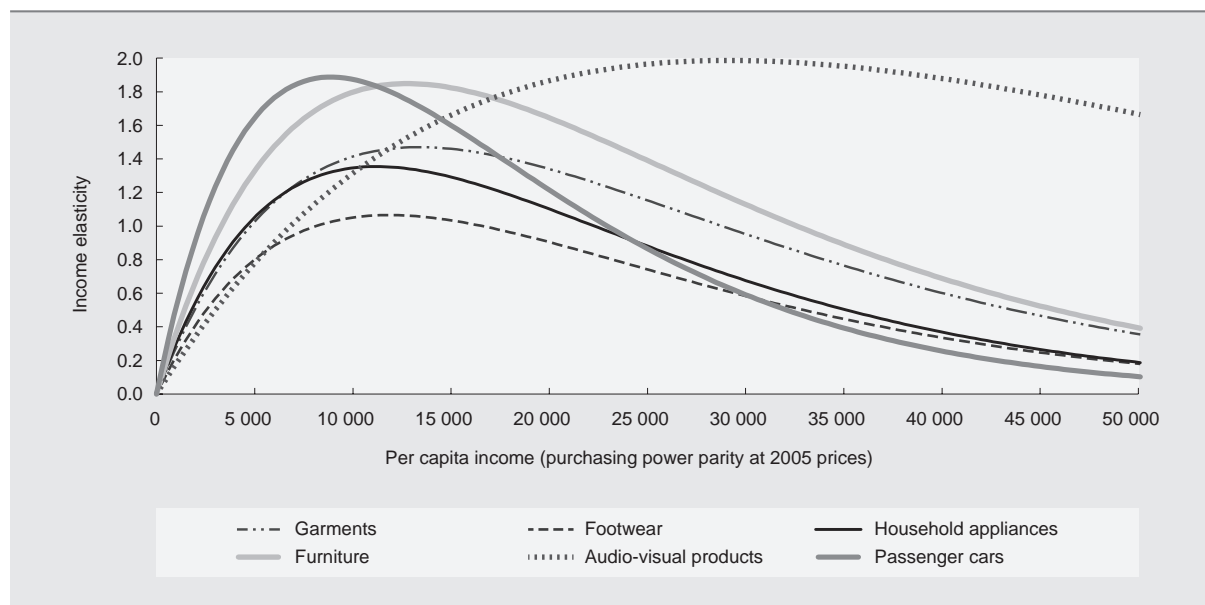
Source: Author's calculations, based on data from Penn World Tables, *UNCTADstat* and Euromonitor.

Taken together, the above evidence indicates that the relationship between product-specific consumption expenditure and per capita income goes through phases of acceleration and deceleration. This implies that different consumer goods markets are likely to see periods of rapid growth, or decline, which are often more rapid than developments in the underlying economies might suggest. The evidence also indicates that the timing of these phases will differ across countries, given that different countries are at different levels of per capita income. These two elements combined offer a sequence of demand spurts for individual consumer goods over the years ahead.

V. THE SIZE OF EMERGING CONSUMPTION EXPENDITURE IN DEVELOPING COUNTRIES

The previous section has shown that rising per capita income growth in a developing country typically engenders accelerating demand for semi-durable and durable consumer goods. As individuals cross certain thresholds of per capita income, they dispose of critical sizes of disposable income that make these products affordable. Thus, demand for these products rises precipitously. The section has also shown that the thresholds which trigger an acceleration of demand for specific consumption items cluster at certain levels of per capita income. These levels closely correspond to what is typically used to characterize an individual as becoming "middle class".

There is no generally accepted definition of the term "middle class". However, in economics and applied empirical analysis, it is generally used to describe the social status of individuals who have a certain amount of discretionary income at their disposal which allows them to engage in consumption patterns beyond just the satisfaction of their basic needs, though not – or only occasionally – their desire for luxury items. Given that many individuals aspire to middle-class status, individuals identifying themselves as being "middle class" is also often used as a definition. This may explain why interpersonal effects on consumer demand, such as bandwagon effects, whereby each person's purchasing pattern is influenced

by what specific products are bought by a proportion of some relevant group of others, has often been an important element in the discussion of middle-class consumption patterns (e.g. Witt, 2001).

The two boundaries that separate the middle class from the poor, on the one hand, and from the rich on the other, may be defined in relative or absolute terms. Relative approaches use quintiles of income distribution or a band around the median of the distribution. The main drawback of these approaches is that they do not permit international comparisons, whereas the advantage of using an absolute approach is that it does permit such comparisons. An absolute approach is similar in spirit to international poverty measures, and allows the tracing of both the size and the income share of the middle class on a global scale. To ensure comparability across countries, such measures employ purchasing power adjustments to translate income expressed in domestic currency units into an internationally comparable unit, i.e. the international dollar.

Bussolo et al. (2011) have used such an approach, where the two thresholds defining the middle class are set as equal to the per capita incomes of Brazil and Italy. Kharas (2010) has also used this approach to define the global middle class as comprising individuals whose daily expenditures are between $10 and $100 in purchasing power parity terms. Both these studies set the lower bound at an annual level of per capita income of about 4,000 international dollars. By contrast, the definition used in Bussolo et al. (2011) implies an upper bound of about 17,000 international dollars, while Kharas (2010) sets the upper bound at about 35,000 international dollars. These differences in the upper bound are reflected in differences in historic measures of the size of the global middle class, as well in its future evolution. Bussolo et al. (2011) estimate that the proportion of the middle class in the total world population will increase from 7.9 per cent in 2000 to 16.6 per cent in 2030, and that over the same period, the number of people in developing countries that are part of the global middle class will grow more than fourfold, to exceed one billion. According to Kharas' (2010) estimates, the size of the global middle class will increase from 1.8 billion people in 2009 to 3.2 billion in 2020 and 4.9 billion in 2030. Asia will account for the bulk of this increase, with the number of people belonging to the middle class in this region estimated to grow sixfold. China and India will account for more than three quarters of the Asian middle class. The size of the middle class in Central and South America will grow by a factor of 2.5, while in sub-Saharan Africa it will triple, yet remain at only 2 per cent of the total; and it will remain more or less unchanged in Europe and North America.[16]

The two boundaries chosen by Kharas (2010) happen to correspond to the levels of per capita income where, according to the calculations discussed in the preceding section, the income elasticity of demand

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[16] Of course, these numbers are merely illustrative and should not be considered exact predictions. The estimates in Kharas (2010) are based on projections of GDP for the period 2008–2050, where GDP is a function of the accumulation of labour (based on prospects for the evolution of the working-age population provided by the United Nations) and capital (based on the average investment rate for the period 1995–2005), as well as total factor productivity growth (based on historic long-term technology growth and an assumed process of convergence with the United States). All these are combined with projections of long-term exchange-rate movements and purchasing-power conversion rates, as well as with data on income distribution and estimates of mean consumption per capita. The estimates in Bussolo et al. (2011) result from a broadly similar methodology, though this focuses on the impact of economic growth in China and India on global growth and distribution, and employs growth rates that are disaggregated by economic sector in order to better model the evolution of income distribution. While the methodological approaches used in these two studies may be subject to criticism, they are, nevertheless, useful for illustrating the key issue raised here, namely that the developing countries are progressively accounting for a larger share of global consumption. The two studies' projections on the evolution of the middle class in developing countries may be considered optimistic as an extrapolation of past developments (e.g. in terms of investment and technological change). This is because they do not take into account the unsustainability of the policies pursued by the developed countries during the decade preceding the outbreak of the current global economic crisis, which provided the favourable external economic environment that allowed high investment rates and technological change in developing countries. But they may also be considered pessimistic, as they assume that the share of household consumption in GDP remains constant over time and that, in the case of Kharas (2010), growth is distribution neutral, and thus do not take into account the impact of policies to strengthen domestic purchasing power and reduce income inequality, which section VII of this paper advocates.

for durable consumer goods crosses unity. This implies that, using Kharas' (2010) definition, for a one per cent rise in the income of individuals belonging to the middle class, the ensuing increase in their expenditure on durable consumer goods will exceed one per cent.

The enormous increase in the size of the global middle class, and the ensuing substantial changes in the size and patterns of global consumption expenditure, relate to three factors, on which the remainder of this section will focus: income distribution, per capita growth rates, and demographic developments.

Evidence on income distribution indicates that the size of the middle class (as defined by Kharas, 2010) varies widely across countries (figure 5). In 2005, which is the most recent year for which comprehensive data are available, the middle class constituted 60 per cent of the population in the United States, compared with only 30 per cent in China, and roughly 5 per cent in India, but about 80 per cent in the Russian Federation. More important for the future evolution of consumption expenditure is the number of people that are at around the entry level of the middle class, where the new spending patterns start emerging. Such income brackets are virtually absent in the developed economies, but comprise more than half of the Chinese and about three quarters of the Indian and Indonesian populations respectively.

Many developing economies continue to have substantial pockets of poverty and lagging regions, especially in sub-Saharan Africa and South Asia. Such pockets hamper a rapid expansion of domestic consumption of durable consumer goods. This is because the S-shaped evolution of consumer expenditure implies a relatively low income elasticity of demand at both low and high levels of income. Accordingly, poverty alleviation such as through government transfers, is unlikely to carry a rapid acceleration of household consumption spending.

But many other developing and transition economies could witness such an expansion in the medium term. Simulations based on expected country-specific per capita income growth rates, combined with the regression results for durable consumer goods reported in table 1, indeed indicate that per-capita expenditure on durable consumer goods in some developing and transition economies may approach that in the United States within a decade or two (figure 6). According to these simulations, such expenditure may grow especially rapidly in China in the years to come and get close to per-capita spending in the United States by 2030–2040. The evolution of such expenditure is likely to be less dynamic for other countries, such as the Russian Federation, Brazil and, especially, India. While per capita expenditure on durable consumer goods in the former two countries still exceeds that in China, the three countries may reach similar per capita spending levels in the 2040s.

However, the results of the simulation shown in figure 6 should be taken only as indicating broad tendencies, rather than as providing predictions. One reason is that the simulations assume no change in income distribution. If tax policies and/or the creation of employment favour middle-income over high-income households, the segments of the population whose incomes are in the range of high or rapidly rising income elasticities of demand could be substantially larger than assumed in the simulations. A second reason is that the simulations are based on the cross-country average, represented by the cross-country regression line in figure 1.[17] Given that, in 2011, per-capita consumption expenditure on durable goods in China and India was substantially below that average, the pace of catch-up for these two countries indicated in figure 6 is too rapid. On the other hand, if the acceleration of such expenditure, based on rapid wage growth, experienced by China for the period 2007–2011 (table 2) continues, the evolution of this country's expenditure will come to match the cross-country average in the near future. This means that, if this acceleration continues, the curve for China shown in figure 6 may well prove rather accurate. Regarding Brazil, the country's per-capita consumption expenditure on durable goods in 2011 was

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[17] As already mentioned, the time period for which consumption expenditure data are available is too short for country-specific estimates and, by implication, simulations based on country-specific data.

Figure 5

Size of the middle class in selected countries, 2005
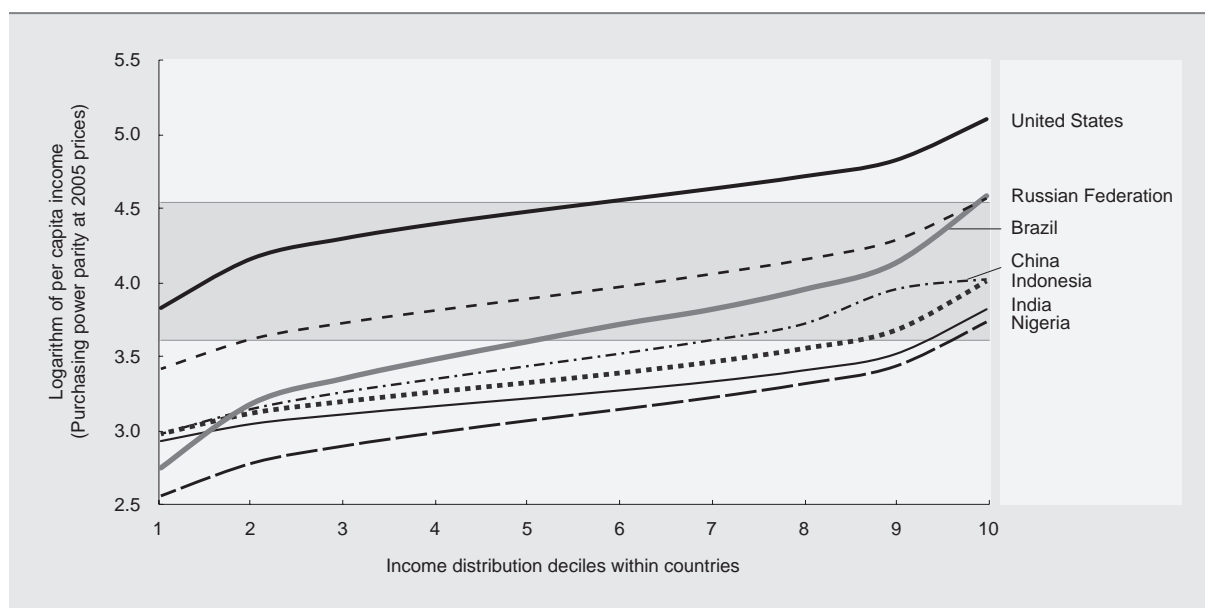
Source: Author's calculations, based on Milanovic (2012).
Note: The two horizontal lines are the lower and upper income limits of the middle class. The size of the middle class in each country is measured by the width of the part of the country line that is within the shaded section.

Figure 6

The evolution of expenditure for durable consumer goods: projections based on actual and expected growth rates of per capita income, selected countries, 2011–2050
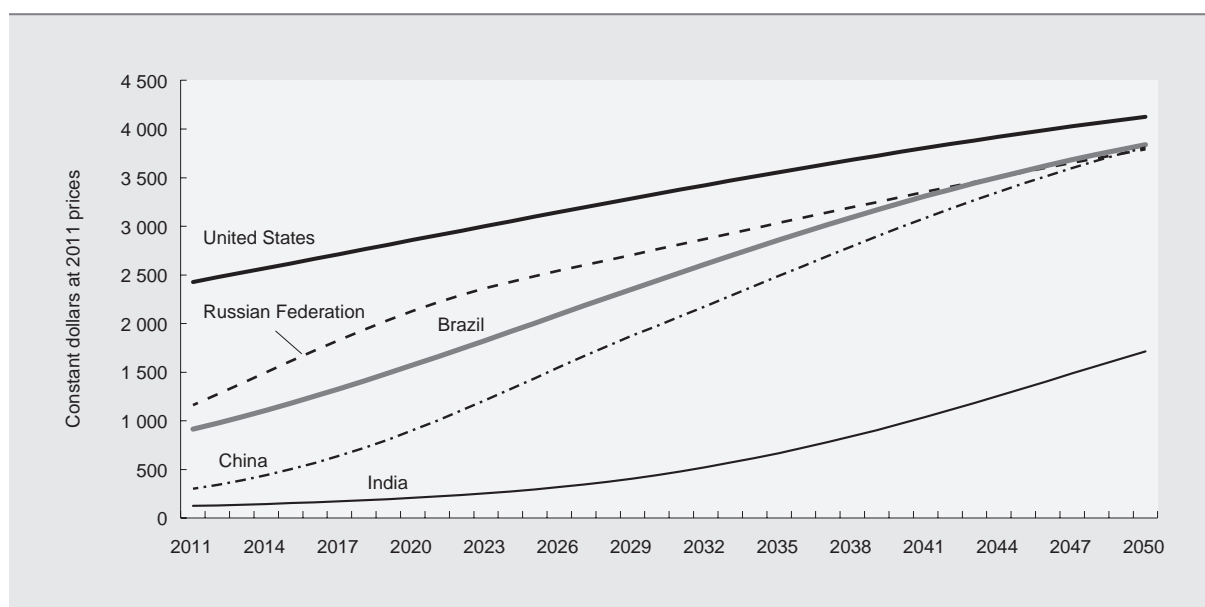
Source: Author's calculations, based on data from Euromonitor, IMF and Johansson et al. (2013).
Note: The simulations are done on the basis of the average of actual growth rates for 2011–2012 as reported in the IMF's World Economic Outlook database and projected growth rates as reported by Johansson et al (2013: 75).

substantially higher than the cross-country average. Hence, the pace of catch-up for Brazil indicated in figure 6 is probably too slow.

It is also important to note that the curves in figure 6 refer to per-capita expenditures. Taking into account differences in population size between the United States and the other countries, catching-up in the level of total expenditure on durable consumer goods can occur much earlier than indicated in the figure. This is true especially for China, whose population of about 1.3bn people is four times that of the United States. This means that the absolute level of China's expenditure on durable consumer goods may well exceed that of the United States by 2020. By contrast, at about 200mn, Brazil's population is significantly smaller, so that the absolute level of this country's expenditure on durable consumer goods may not exceed that of the United States in the foreseeable future.

Demographic developments will also affect expenditure on durable consumer goods. One reason is that the share of working-age people in the population may determine access to consumer credit. Working-age people who earn a stable income are more easily able to tap their income stream or home equity as collateral. Thus, at given levels of per capita income, these people's actual expenditure may exceed that of people in other age cohorts. Another reason is that unless an effective social security system is in place, an aging population is likely to spend less on consumption as it builds up savings to provide for the elderly. In many developing countries, notably in East Asia, the share of working-age people in the population is falling as the share of the elderly rises. In other countries, notably in sub-Saharan Africa, large cohorts of young people are entering the workforce. If these economies succeed in reducing unemployment, promoting labour productivity and fostering greater labour force participation, they may well experience a rapid increase in expenditure on durable consumer goods.

Taken together the evidence discussed in this section indicates that middle-class consumers from developing and transition economies could soon drive many consumer goods markets, not only in terms of growth and incremental demand, but also – and this is a qualitative change – in terms of the absolute magnitude of their consumption.

VI. POTENTIAL TRADE EFFECTS OF SHIFTING GLOBAL DEMAND PATTERNS

The three preceding sections considered the evolution of consumer spending patterns as income rises. This section analyses the implications for international trade of changes in spending patterns when these are part of a shift in the composition of aggregate demand in developing countries away from exports towards more domestic consumption. It assesses these implications through simulations with the well-established global model of the Global Trade Analysis Project (GTAP).[18]

The simulations relate to changes over a ten-year period, and are based on the GTAP-dataset for 2007. They assume that (i) economic growth in all countries is exogenously given at the IMF's actual and projected rates for the period 2012–2013;[19] (ii) in both China and the United States, the share of household consumption in GDP is restored to more normal levels, that this share rises in all other countries (leaving total world consumption the same), and that any change in a country's share of income used for private

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[18] For documentation of the model, see Hertel (1997), and for the GTAP-8 database, see Narayanan, Aguiar and McDougall (2012).

[19] The growth rates for 2012–2013 are preferred over the IMF's projected growth rates for the period 2013–2018 because the latter, which include a projected rate for China that exceeds 9 per cent, seem too optimistic. However, using the IMF's rates for the period 2013–2018 affects the results reported in tables 3–5 only marginally. In technical terms, the assumed growth rates are generated in the GTAP-model by assuming value-added augmenting technical change.

consumption will be reflected entirely in changes in its share of savings in income;[20] and (iii) income elasticities of demand differ across products and countries in the ways shown in sections III and IV above.[21] The results of the simulations, which are based on a matrix of 25 countries and country groups and 25 products and product groups, are presented in terms of changes relative to a baseline scenario that includes only the first of these three assumptions. Thus, the simulations are designed to show what difference it would make to sectoral and inter-country trade flows if growth was accompanied by a fall in consumer spending as a share of GDP in the United States and by a rise in all other countries, taking into account differences in income elasticities of demand across products and countries.

Table 3 shows the assumptions referring to growth rates and shares of household consumption in GDP (columns 7 and 8) and presents the simulation results for country-specific trade flows. Given the assumption that growth is accompanied by a re-composition of national income between consumption and external trade, the results reflect substantial changes to exports and imports: except for the United States, whose exports would substantially increase, and its imports decrease, all countries' exports would decline and most countries' imports would increase (columns 3 and 4). The resulting deterioration of the trade balance (column 1) would amount to about 3 percentage points of GDP for most countries and country groups. China's trade balance would deteriorate by more than 6 percentage points, while that of the United States would improve by about 6 percentage points. Most countries would experience a significant decline in their trade surplus, while the trade account would move into deficit for countries in Latin America and reach strongly negative territory for Viet Nam, Egypt, Bangladesh, and Turkey (column 2).

Changes in the terms of trade are a corollary of these changes in country-specific trade flows. They improve in all countries except for the United States, whose terms of trade decline by almost 8 per cent (column 5). The other advanced economies would experience no (Germany) or only small (Japan and the group of other advanced economies) improvements in their terms of trade. Combined with the mentioned changes in exports and imports, these changes in the terms of trade may be interpreted as advanced country enterprises, especially those in the United States, benefitting significantly from rising consumer expenditure in other countries through lower prices.

The simulation indicates that this would lead to (i) a sizeable improvement in the trade balance of the United States, while that of all other countries would deteriorate, in some cases substantially; (ii) a decline in world trade of motor vehicles and, especially apparel, while world trade in food products and services would increase; and (iii) an increase in individual countries' exports to large developing economies (such as Brazil, China and India), a strong decline in exports to advanced economies, and some decline in intra-regional South-South trade.

Table 4 shows changes in country-specific trade regarding the four products emphasized in sections III and IV. The United States would improve its trade balance especially for motor vehicles and services. This would be accompanied by a sharp deterioration in the trade balance for motor vehicles in Mexico, South Africa, Brazil and the Republic of Korea. The results also indicate a strong decline in international trade of apparel. This mainly reflects the falling share of household consumption in GDP in the United States and the ensuing decline in the country's apparel imports, which account for over two thirds of the total decline in world apparel trade. The results also indicate the associated sizeable adverse effects for least-developed countries, such as Bangladesh and Viet Nam, as well as for other countries with large market shares in global apparel trade, such as Indonesia and Turkey, and for Egypt. Regarding the other

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[20] In technical terms, conducting simulations based on these assumptions requires, for all countries, (i) the variable 'private consumption expenditure (*yp*)' to become exogenous and the 'private consumption distribution parameter (*dppriv*)' to become endogenous, and (ii) the 'savings distribution parameter (*dpsave*)' to become exogenous and the 'average distribution parameter shift (*dpav*)' to become endogenous.

[21] In technical terms, to obtain the targeted product-specific income elasticity of demand (*EY*) requires changes to the expansion parameter *INCPAR* and the substitution parameter *SUBPAR*, combined with some calibrations, in the formula referring to *EY* (see also Burfisher, 2011: chapter 4).

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Table 3
**GTAP simulation results of the impact of rebalancing
in developed and developing economies on trade flows**

| | Trade balance as a share of GDP | Share of trade balance in GDP | Export volume | Import volume | Terms of trade[a] | Real private con-sumption | GDP[b] | Share of consump-tion of GDP |
							Memo items:	
	(Percentage points)	(Per cent)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bangladesh	-3.4	-10.4	-15.8	1.4	1.9	4.8	6.0	3.0
Brazil	-3.6	-1.7	-21.0	11.8	5.3	6.5	1.9	3.0
China	-6.2	1.9	-17.2	3.0	2.9	20.7	7.9	7.0
Egypt	-3.8	-12.0	-10.5	3.1	2.7	5.4	2.1	3.0
Germany	-0.8	5.7	-2.2	-0.0	0.0	1.8	0.7	1.0
India	-3.0	-7.1	-12.6	4.2	2.9	5.7	4.8	3.0
Indonesia	-2.8	1.8	-8.9	2.5	1.5	5.3	6.3	3.0
Japan	-0.8	0.5	-4.5	0.5	0.3	1.8	1.8	1.0
Malaysia	-2.4	23.7	-3.1	-0.6	0.2	7.4	5.4	3.0
Mexico	-3.4	-1.0	-11.8	5.1	4.1	5.6	3.7	3.0
Nigeria	-2.9	6.4	-3.6	7.0	1.0	4.1	6.8	3.0
Philippines	-2.8	0.8	-6.5	-0.2	0.7	4.7	6.3	3.0
Republic of Korea	-2.8	0.4	-6.9	1.1	1.2	6.3	2.4	3.0
Russian Federation	-2.8	5.5	-6.4	6.1	1.1	6.3	3.4	3.0
South Africa	-3.3	-5.0	-8.8	3.5	1.6	5.2	2.7	3.0
Taiwan Province of China	-2.7	11.3	-4.7	-0.3	0.7	6.0	2.1	3.0
Thailand	-2.6	8.2	-3.7	0.5	0.4	6.3	6.2	3.0
Turkey	-3.5	-10.1	-14.2	4.4	2.9	5.2	3.0	3.0
United States	6.0	-0.2	48.1	-15.1	-7.7	-8.0	2.0	-5.0
Viet Nam	-3.1	-17.5	-3.8	0.1	0.3	5.1	5.1	3.0
Rest of developed countries	-0.9	-2.3	-2.2	0.8	0.5	2.0	0.1	1.0
Rest of Latin America	-3.1	-1.8	-9.0	5.2	2.5	6.0	3.9	3.0
Rest of MENA	-2.7	9.8	-3.3	4.0	1.0	7.4	3.2	3.0
Rest of SSA	-3.3	-5.2	-5.3	4.1	1.0	5.4	5.8	3.0
Rest of developing countries	-2.6	6.1	-3.7	1.4	0.8	5.7	3.2	3.0

Source: GTAP simulations.
Note: Reported changes are differences relative to changes in the baseline scenario, where assumed GDP growth is
(i) not accompanied by changes in the share of consumption in GDP and
(ii) subject to the income elasticities as in the original GTAP-database referring to 2007.
MENA = Middle East and North Africa; SSA = sub-Saharan Africa.
a An improvement in the terms of trade indicates that the price of exports increased more (or fell less) than the price for imports.
b The assumed changes in GDP are the average of the actual and expected growth rates for the period 2012–2013 reported in IMF, *World Economic Outlook* database, April 2013.

products, the decline in international trade of motor vehicles would have adverse effects mainly for Mexico, while the increase in international food trade would benefit the United States rather than the developing countries. Moreover, India's balance of services trade would strongly deteriorate.

The results for changes in bilateral trade (table 5) indicate that these sizable changes in countries' sectoral trade balances are mostly a result of lower exports to the United States, which itself is caused

Table 4

GTAP simulation results in sectoral trade balance, selected economies/groups

(Per cent of GDP in baseline)

	United States	Japan	Ger-many	China	Rep. of Korea	Taiwan Prov. of China	Indone-sia	Malaysia	Philip-pines	Thailand	Viet Nam	Bangla-desh
Food	0.1	-0.0	-0.0	-0.2	-0.0	-0.1	-0.1	-0.1	-0.1	-0.0	-0.0	-0.0
Apparel	0.1	0.0	0.0	-0.2	-0.0	-0.0	-0.1	-0.1	-0.1	0.0	-0.4	-1.2
Motor vehicles	0.4	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.0	-0.1	-0.0
Services	0.5	-0.0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	-0.5	-0.2	-0.1

	India	Brazil	Mexico	Rest of Latin America	Russian Federa-tion	Rest of MENA	Turkey	Egypt	Nigeria	Rest of SSA	South Africa	Memo item: Change in vol-ume of exports
Food	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.4	-0.2	-0.1	-0.0	2.7
Apparel	-0.1	-0.0	-0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.0	-0.1	-0.0	-3.9
Motor vehicles	-0.1	-0.3	-0.5	-0.1	-0.2	-0.2	-0.5	-0.1	-0.1	-0.1	-0.4	-0.9
Services	-0.6	-0.3	-0.1	-0.2	-0.3	-0.3	-0.1	-0.4	-0.2	-0.4	-0.1	0.8

Source: GTAP simulations.

Note: Reported changes are differences relative to changes in the baseline scenario, where assumed GDP growth is
  (i) not accompanied by changes in the share of consumption in GDP and
  (ii) subject to the income elasticities as in the original GTAP-database referring to 2007.
  MENA = Middle East and North Africa; SSA = sub-Saharan Africa.

by the assumed decline in household consumption in this country's GDP. But countries' bilateral trade balance with the other developed countries also deteriorates. By contrast, exports to the large developing economies (Brazil, China, India) would benefit most: of the 25 countries and country groups, 15 would experience an increase in their exports to Brazil, 14 would have larger exports to India, and 5 to China.

The fact that so few countries increase their exports to China, and all other Asian countries suffer a fall, is likely to result from the decline in China's exports to developed countries: such exports often represent re-exports of intermediate goods imported from other Asian countries which enterprises in China process for further export to advanced economies. This fact may also explain why the results for intra-regional South-South trade indicate a decline. In Asia, this is the case in particular for exports to China from the Republic of Korea and Taiwan Province of China. Regarding Latin America, the bilateral trade balance with Mexico deteriorates for all countries, except the United States, which is also likely to be an effect of the very strong deterioration of Mexico's bilateral trade balance with the United States.

It should be borne in mind that the results of the simulation are only partial and should not be taken as quantitatively precise predictions. They do not take into account a number of factors, such as difficulties in moving production factors across sectors, subsidies and problems of market access and entry. Nevertheless, the simulations are useful for identifying the countries and sectors that are vulnerable to a decline in United States household consumption, as well as those that might benefit from more consumption in developing countries, and for indicating broad directions and the order of magnitudes involved.

One such direction regards the probability that most of the benefits of expanding consumer goods markets in developing countries may accrue to developed country enterprises. This could well be taken to suggest that developing economies will be capable of providing the markets for net exports to pull the developed economies out of their current economic problems. This would be erroneous for at least two

Table 5

GTAP simulation results for changes in bilateral trade, selected economies/groups

(Per cent)

Exporters	United States	Ger-many	Japan	China	India	Malay-sia	Rep. of Korea	Taiwan Prov. of China	Brazil	Mexico	Rest of devel-oped coun-tries	Rest of Latin America
Bangladesh	-7.6	-1.5	-0.2	-0.0	-0.1	-0.0	-0.1	-0.0	-0.0	-0.1	-5.5	-0.1
Brazil	-4.5	-1.0	-0.6	-0.8	-0.1	-0.1	-0.2	-0.2	n.a.	-0.9	-5.0	-4.5
China	-5.8	-0.8	-1.4	n.a.	-0.2	-0.2	-0.8	-0.4	-0.1	-0.4	-3.7	-0.4
Egypt	-3.1	-0.7	-0.3	-0.1	-0.2	-0.0	-0.2	-0.0	-0.0	-0.2	-4.1	-0.1
Germany	-1.1	n.a.	-0.0	0.1	0.0	-0.0	-0.0	-0.0	0.0	-0.1	-1.5	-0.0
India	-4.1	-0.5	-0.3	-0.5	n.a.	-0.1	-0.2	-0.1	-0.1	-0.1	-3.4	-0.2
Indonesia	-2.6	-0.3	-1.2	-0.6	0.0	-0.3	-0.4	-0.2	0.0	-0.1	-1.6	-0.1
Japan	-2.6	-0.1	n.a.	-0.2	0.0	-0.1	-0.4	-0.4	0.0	-0.3	-0.6	0.0
Malaysia	-1.9	-0.1	-0.1	-0.5	0.1	n.a.	-0.1	-0.1	0.0	-0.2	-0.4	-0.0
Mexico	-10.7	-0.1	-0.0	-0.1	0.0	-0.0	-0.0	-0.0	0.0	n.a.	-0.5	-0.3
Nigeria	-2.5	-0.1	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.0	-0.5	-0.1
Philippines	-2.1	-0.2	-0.4	-2.2	0.0	-0.3	-0.2	-0.2	0.0	-0.0	-0.5	-0.0
Republic of Korea	-1.8	-0.3	-0.4	-1.4	-0.0	-0.1	n.a.	-0.3	0.0	-0.5	-1.2	-0.1
Russian Federation	-0.8	-0.5	-0.2	-0.2	-0.1	-0.0	-0.1	-0.1	-0.0	-0.0	-2.8	-0.1
South Africa	-1.6	-0.7	-0.7	-0.4	-0.4	-0.0	-0.2	-0.2	-0.0	-0.1	-2.9	-0.1
Taiwan Province of China	-1.9	-0.1	-0.2	-1.4	0.0	-0.1	-0.2	n.a.	0.1	-0.2	-0.5	-0.0
Thailand	-2.0	-0.1	-0.4	-0.5	0.1	-0.1	-0.1	-0.1	0.1	-0.1	-0.7	0.0
Turkey	-1.5	-1.8	-0.1	-0.1	-0.0	-0.0	-0.0	-0.0	-0.0	-0.1	-7.7	-0.1
United States	n.a.	2.8	3.0	3.6	1.0	0.5	1.9	1.0	1.2	2.6	19.6	2.9
Viet Nam	-3.1	-0.0	-0.4	0.0	0.0	-0.0	0.0	-0.1	0.0	-0.1	-0.3	0.0
Rest of developed countries	-1.5	-0.2	-0.0	0.1	0.0	-0.0	-0.0	-0.0	0.0	-0.1	-0.9	0.0
Rest of Latin America	-3.1	-0.3	-0.2	-0.4	-0.0	-0.0	-0.2	-0.1	-0.1	-0.6	-2.4	-1.1
Rest of MENA	-1.4	-0.1	-0.2	-0.2	-0.1	-0.0	-0.1	-0.0	-0.0	-0.0	-0.9	-0.0
Rest of SSA	-1.5	-0.2	-0.1	-0.3	0.0	-0.0	-0.1	-0.0	0.0	-0.0	-1.9	-0.0
Rest of developing countries	-1.7	-0.1	-0.2	0.1	0.0	-0.2	-0.2	-0.1	0.1	-0.0	-0.9	-0.0

Source: GTAP simulations.
Note: Reported changes are differences relative to changes in the baseline scenario, where assumed GDP growth is
(i) not accompanied by changes in the share of consumption in GDP and
(ii) subject to the income elasticities as in the original GTAP-database referring to 2007.
The numbers shown are disaggregations of the changes in export volume reported in column 3 of table 3.
n.a. = not applicable.

reasons. First, the simulations are supply-driven, with exogenous growth rates and markets clearing at full employment, so that they shed no light on whether consumption could replace exports as an autonomous driver of aggregate demand. Moreover, an increase in consumers' real income based on a decline in the prices of imported goods may spur consumption expenditure for some time, but such a process is not sustainable. Hence, to maintain economic growth based on a greater importance of domestic consumer demand, developing countries will need to foster domestic purchasing power and innovation in product development and marketing networks. The related policy issues are addressed in the conclusions.

VII. CONCLUSIONS

This paper has examined longer term options available to developing countries to continue catching up in spite of the widely expected prolonged period of slow growth in developed countries that reduces the viability of export-led development strategies. It analysed whether developing countries have sufficiently large domestic markets to replace the demand stimulus from exports of manufactures to developed countries by domestic demand, and what trade implications such a shift towards more balanced growth would have. Its findings indicate that large developing countries may see their sales potential related to household consumption demand grow sufficiently rapid, but also that imports might meet most of that sales potential. The resulting import boom would add to the changes in the trade balance related to declining exports. However, innovative investment would allow domestic firms to develop new products, and customize existing ones, to meet the preferences of domestic consumers and avoid an import surge. Domestic firms that possess valuable local knowledge on consumer preferences may be better placed to serve emerging domestic consumer markets than foreign firms that usually cater to high-income consumers.

These findings underline that developing countries should not underestimate the challenges associated with the need to adapt their policy stance to a less favourable external economic environment. It is clear that they should not neglect demand management but maintain policies aimed at reducing both domestic and external vulnerabilities. But in addition, developing countries whose exports of manufactures to developed countries used to account for an important segment of their export-oriented growth strategy will need to shift to a more balanced growth path. The relative weight that such a policy stance confers to the three components of domestic demand (i.e. household consumption, investment and government expenditure) will depend on country-specific circumstances. Yet, any policy measure will need to recognize the strong interdependence between these three components.

Changes in public revenue and spending patterns can boost both household consumption and investment. However, nurturing the interrelationship between household consumption and private investment will be at the centre of a shift towards a more balanced growth strategy. Measures to boost domestic purchasing power through the creation of employment and wage opportunities are of critical importance because labour income is the most important source of domestic purchasing power. Related policy measures concern incomes and employment policies, such as the implementation of a legal minimum wage complemented by enhanced public employment, and systematic adjustments of wages in line with the economy's average productivity growth.

Moreover, increased household consumption will induce product innovation and investment in productive capacity. Higher investment, in turn, will create employment and wage opportunities, thereby boosting domestic purchasing power, as well as tax revenue for government spending. And productivity gains resulting form additional investment will allow for further increases in wages and consumption.

Induced innovation and investment may be particularly sensitive to two factors. First, the tastes and preferences of middle-class consumers in developing countries may well differ from the existing high-end products much sought after by consumers in developed countries and by the most affluent groups of consumers in the largest cities of developing countries, who are the standard targets of developed country firms. Domestic producers may have an advantage over foreign enterprises in developing goods whose characteristics match the preferences of local middle-class consumers. Second, emphasizing that trade is not costless, and that geographical distance to markets still matters, the literature on international trade and economic geography has shown how market size and relative geographic position affect specialization patterns. In particular, greater domestic demand for manufactured consumer goods "will lead to higher wages which, in the presence of non-homothetic preferences combined with positive trade costs, will shift local production towards the manufacturing sector" (Breinlich and Cuñat, 2013: 134). In taking advantage of the associated innovation opportunities, developing-country firms would need to combine investment in supply- and demand-dynamic sectors, thereby reducing the import content of rising domestic consumption expenditure. This latter point illustrates that even a growth strategy based on an increase in domestic demand needs to give strong emphasis to the supply structure of the economy.

ANNEX 1

*A note on the functional form of the relationship between per capita income
and consumption expenditure*

Empirical studies on Engel curves, which describe household expenditure on particular goods or services depending on total household expenditure, have long debated the type of consumer preferences and the associated functional form for Engel-curve estimations that best fit the data. All of these studies share the rejection of homothetic preferences. These studies also discussed quasi-homothetic preferences that combine a fixed expenditure element, which is used for subsistence, with expenditure in excess of that required for subsistence. As with homothetic preferences, assuming quasi-homothetic preferences maintains the implication that Engel curves are linear lines which, however, need not go through the origin, given the assumption of a fixed expenditure component used for necessities. Examples of quasi-homothetic preferences are Stone-Geary utility functions (such as in Kongsamut, Rebelo and Xie, 2001) and the linear expenditure system, which was used by Lluch, Powell and Williams (1977) in their classic study of pattern in consumer demand. Regarding the functional form used in studies that assess consumption expenditure on necessities and non-necessities, Prais and Houthakker (1955) investigated several possibilities and concluded that a semi-logarithmic form is suited best to necessities but that a double logarithmic form better fits expenditures data on non-necessities. Houthakker (1957) also uses a double-logarithmic form and Chenery (1979) further adds a logarithmic squared term to allow sectoral expenditure elasticity to change as incomes rise.

As discussed by Chai and Moneta (2010), more recent studies have explored more complex and flexible forms, such as S-shaped curves or polynomial forms. Such more complex forms would appear to be particularly appropriate for studies that assume a hierarchy of needs with minimum income thresholds for consumption of a particular non-necessity to begin, as well as maximum income thresholds where such consumption becomes saturated. Further insights into the determination of functional forms may be gained through nonparametric analysis.

An exploration of the functional form regarding the relationship between per capita income and passenger car registration indicates that an S-shaped curve best fits the data. Saturation cannot be represented either by the double-log function, which continues rising even at high levels of income, or by the polynomial function, which suggests a decline in consumption at high levels of income. The linear-log form can represent saturation, even though at too low levels of consumption, but is inadequate to represent the lower threshold. Non-parametric kernel estimations suggest the presence of such a lower threshold. A country-specific estimation for the United States, where long time series on car ownership are available and where potential one-off effects of post-war reconstruction on the relationship between income and consumption can be excluded, also suggests the S-shaped curve to be the most appropriate functional form.[22]

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[22] Supportive evidence is available from the author on request.

ANNEX 2

Definition of product categories and country samples

The product categories used in sections III and IV are defined as follows:

A **durable good** may be used repeatedly or continuously over a period of more than a year, assuming a normal or average rate of physical usage. Durable goods include: furniture and furnishings; carpets and other floor coverings; major household appliances, whether electronic or not; major tools and equipment; therapeutic appliances and equipment; motor cars; motor cycles; bicycles; animal drawn vehicles; telephone and telefax equipment; equipment for the reception, recording and reproduction of sound and pictures; photographic and cinematographic equipment and optical instruments; information processing equipment; major durables for outdoor recreation; musical instruments and major durables for indoor recreation; jewellery, clocks and watches.

Semi-durable goods include: clothing materials; garments; other articles of clothing and clothing accessories; shoes and other footwear; household textiles; small electrical household appliances; glassware, tableware and household utensils; small tools and miscellaneous accessories for personal transport equipment; recording media; games, toys and hobbies; equipment for sport, camping and open-air recreation; books; electrical appliances for personal care; other personal effects.

A **non-durable good** is used up entirely in less than a year, assuming normal or average rate of physical usage. Non-durable goods include: bread and cereals; meat; fish and seafood; milk, cheese and eggs; oils and fats; fruit; vegetables; sugar, jam, honey, chocolate and confectionery; food products not included elsewhere; coffee, tea and cocoa; mineral waters, soft drinks, fruit and vegetable juices; spirits; wine; beer; tobacco; materials for the maintenance and repair of the dwelling; water supply; electricity; gas; liquid fuels; solid fuels; heat energy; non-durable household goods; pharmaceutical products; other medical products; fuels and lubricants for personal transport equipment; gardens, plants and flowers; pets and related products; newspapers and periodicals; miscellaneous printed matter; stationery and drawing materials; other appliances, articles and products for personal care.

The sample used for the regression analysis in section III concerning all products except passenger cars includes the following 84 economies:

Developed countries (32): Australia, Austria, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States.

Transition economies (13): Azerbaijan, Belarus, Bosnia and Herzegovina, Croatia, Georgia, Kazakhstan, Montenegro, Russian Federation, Serbia, the former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine, Uzbekistan.

Africa (6): Algeria, Egypt, Morocco, Nigeria, South Africa, Tunisia.

Developing America (13): Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Mexico, Peru, Uruguay, Venezuela (Bolivarian Republic of).

Western Asia (7): Bahrain, Jordan, Kuwait, Qatar, Saudi Arabia, Turkey, United Arab Emirates.

Eastern, Southern and South-Eastern Asia (13): China, Hong Kong (China), India, Indonesia, Iran (Islamic Republic of), Malaysia, Pakistan, the Philippines, Republic of Korea, Singapore, Taiwan Province of China, Thailand, Viet Nam.

The sample used for the regression analysis concerning passenger cars excludes the following 32 economies from the 84-economy sample:

Azerbaijan, Belarus, Bolivia (Plurinational State of), Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Guatemala, Hong Kong (China), Kazakhstan, Kuwait, Latvia, Lithuania, Montenegro, Nigeria, the Philippines, Russian Federation, Qatar, Romania, Serbia, Singapore, Slovakia, Slovenia, the former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Viet Nam.

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