PART IV GVC ANALYTICAL AND POLICY FRAMEWORK

Contents

A. Introduction

1. The proposed GVC satellite accounts and integrated business statistics framework will serve the understanding by the general public and policy makers of how irrevocably connected to, and dependent on, their economies are to global value chains (GVCs). A range of socio-economic and environmental policies are affected by enhanced understanding of GVCs. The GVC analytical and policy framework includes the following analyses and policies: trade policy; economic development policy, including competitiveness and potential for upgrading within a GVC; tax policy; financial regulation; macroeconomic analysis and policy; labor markets and welfare policy; environmental and energy policy and security policy.

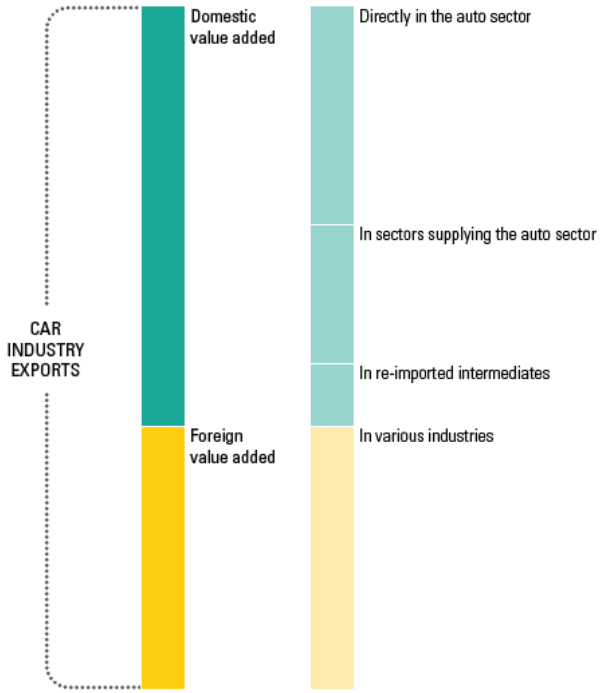
B. Trade Policy

a. Trade in value added

2. There is an increasing recognition that trade policy based on bilateral gross trade flows should be complemented by measures of value-added contributions from exports and imports. Specifically, bilateral trade balances measured in gross terms could be deceptive because they do not make explicity the value added content in imports from third countries, including domestic value added. Rather, policy-makers increasingly need to consider the potential impact of trade policy measures on the competitiveness of domestic lead firms of global enterprise groups and other MNEs that rely heavily on imported inputs. GVC acounts and related business statistics will allow for the policy analysis on the the creation of domestic value-added that are embodied in imports and the effect of pass-through of additional costs in the supply chain on final consumers.

3. Figure 1 shows a sample decomposition of gross exports in the automotive sector into (i) the foreign value added and (ii) the domestic value added. Domestic value added consists of the direct value-added contribution within the automotive sector, the indirect contribution of upstream sectors supplying to the automotive sector, and of re-imported intermediates.

Figure 1: Decomposition of gross exports in the automotive sector



Source: Taglioni and Winkler (2016, p. 76), based on Baldwin and Lopez-Gonzalez (2013).

4. Use of such value-added measures rather than gross measures does not change countries overall trade balances but does change bilateral balances by eliminating double-counting of trade flows, replacing them with value-added contributions to trade, thereby providing an improved basis for public understanding and policy. Generally, it will lower bilateral trade deficits with countries that are near the end of the value-added chain that are processing and assembling final goods and services, and with neighboring countries that are the conduit for trade. Bilateral balances will rise with countries further up the supply chain that provide inputs to countries involved in final assembly and processing. Value-added counting, by eliminating double-counting of trade, will also lower total value of exports and imports without affecting overall trade balances.

5. The availabiliy of trade in value-added data—as opposed to gross trade data—shapes trade policy through at least two channels: First, increasing trade imbalances have been subject to protectionist pressure, including on tariffs and exchange rates. Second, the contribution of upstream industries, in particular services, to gross exports of downstream industries is more easily quantifiable with the availability of trade in value-added data. The competitiveness of upstream sectors—both domestic and foreign—matters as much as that of the exporting sector for countries' successful participation in GVCs. For instance, the famous iPhone case study by Xing and Detert (2010), shows that in 2007, China ran a USD 1.9 billion surplus with the United States if measured in gross export terms. In value-added terms, however, China ran a trade deficit of USD -48.1 million, because a large share of Chinese exports included U.S. value added. Moreover, depreciation of a currency can impact the profitability of domestic lead firms who rely on imports.

b. Tariffs

6. Despite the large gains from trade and globalization, the unequal distribution of the gains and losses from trade and globalization and the lingering effects of global downturns can contribute to increasing protectionist sentiment. It is useful to review the statistical toolkit available to analysts for measuring the impact of tariff policies, and what new tools may be required to measure the impact of on the domestic economy taking into account its integration in GVCs.

7. The textbook analysis of higher tariffs examines the increase in government revenue from the tariff, the higher domestic price of the import, increased domestic production from import substitution, increased domestic profits and earnings, inefficiency from the switch to domestic production, and the loss consumer surplus. Trade studies also typically consider the macroeconomic impacts of tariffs; i.e., initially a tariff will reduce aggregate imports, thereby raising net exports, and aggregate demand, which will over time could lead to a rise in domestic prices, interest rates, and exchange rates. Ultimately, without monetary accommodation for the resulting increased aggregate demand for the domestic currency, the end result will be higher prices, interest rates, and exchange rates, with lower exports and increase imports for goods not directly affected by the tariff. Contrary to the expected economic benefits, the second order effects of the increase in tariffs may negative effects on net exports or real GDP.

8. Empirical analyses of the effects of trade restrictions (or of free trade agreements) often focus on the effects of skill-biased technical change from the effects of trade restrictions/more open trade. Most research suggests that advances in automation, technology, and productivity account for most of the job losses in manufacturing rather than greater openness to trade. As recommended in the Handbook, extended measures of technological change and productivity through the incorporation of KLEMS accounts in the GVC accounting fraemwork could provide a new basis for such jobs and skills related analysis.

9. GVC accounts and related business statistics can improve the analysis of potential impacts of tariffs by highlighting the indirect effect of tariffs on both importers and exporters and how much of the value-added of MNEs come from foreign subsidiaries. Moreover, supplementing direct investment data with extended sets of intellectual property asset accounts would help policymakers examine the indirect impact of tariffs on domestic investment.

10. Single country GVC accounts could improve the analysis of the direct and indirect impact of tariffs on cross border income flows and thus GNI. GVC accounts in a multi country framework would extend the analysis in assessing the upstream and downstream effects of tariffs on domestic incomes and employment. Effects of tariffs on GDP are important, but their political impact comes through the effect of tariffs on people's incomes – compensation, employment, profits, interest, and taxes. Such extensions to the compensation, profits, and net interest components could be useful in understanding the domestic value added included in imports, and the impact of a tariff on domestic employment in industries ranging from retail to finance from cross border production, tax and financing arrangements.

11. Existing price and quantity indexes can, like exports and imports, provide a picture of the net impact of country- and industry- specific tariffs on export and import prices, but cannot provide a complete picture of the indirect impact of GVCs on the prices and quantities. Nor do the existing national SUTs help with predicting and understanding the total (direct and indirect) impact of tariffs on the prices confronted by consumers, business, and government. Similar information on volume, or quantities, is also missing. Mulit-country GVC accounts extended with the KLEMS tables could supply a complete picture (direct and indirect) of the GVC effects across countries on prices, quantities, and productivity.

c. Preferential Trade Agreements (PTAs)[1]

12. A new GVC policy framework has emerged in which imports matter as much as, if not more than, exports and in which the flows of goods, services, people, ideas, and capital are interdependent and must be assessed jointly. Therefore, effective trade liberalization goes beyond the tariff rate on final goods. Because economic integration often involves opening and leveling the playing fields in terms of investment, intellectual property and competition policy, participation in PTAs seems to be an effective way to expand involvement in GVCs. New areas covered in these agreements facilitate the operations of complex production structures that span multiple borders.

d. Multilateral trade agreements

13. Better data on GVCs can also facilitate multilateral trade and investment agreements that reflect the fact that barriers between third countries upstream or downstream matter as much as barriers put in place by direct trade partners. In a GVC context, trade agreements will have a larger impact when more dimensions of a GVC are covered, both geographically and sectorally, including services, labor, intellectual property, capital and technology across borders. Multilateral trade agreements can increase the competitive advantage of an entire region participating in GVCs and can amplify the impact of trade liberalisation on investment, growth and job creation across entire regions.[2]

C. Economic Development Policy, Competitiveness and Upgrading[3]

14. The availability of trade in value-added data also allows to quantify the contribution of upstream sectors to gross exports in a country. Upstream sectors contain both (i) foreign value added, and (ii) domestic value added that are supplied to exporting sectors. Typically, countries entering manufacturing GVCs start as buyers of foreign technology and know-how which enables them to increase their domestic value added that is exported. For further upgrading in manufacturing, countries need to increase the share and quality of domestic services value added and become sellers of final products of the GVC.

15. Most countries have increased their dependence on foreign inputs, measured by the share of foreign value added as a percentage of their gross exports, as they increasingly rely on imported inputs that are processed and subsequently exported. But the competitiveness of the domestic segment of the value chain is as important as that of the international segment.

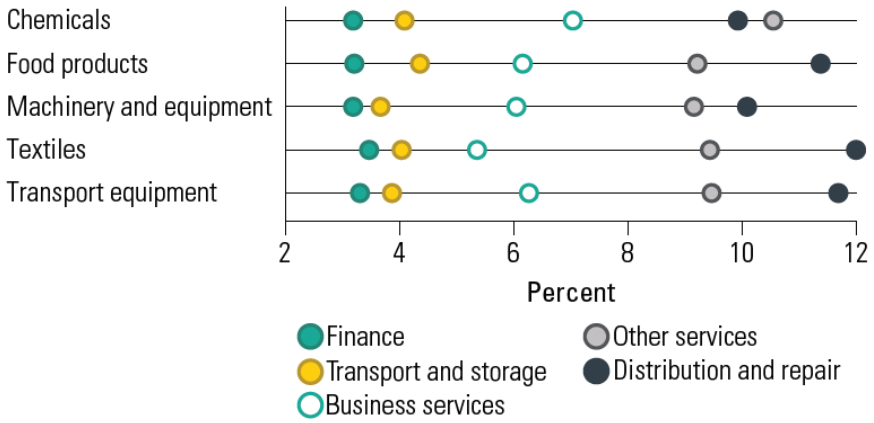
16. Exports of domestic value added can be undermined by inefficient domestic links, including the unreliability or high cost of domestic transport, the fresh product cool chain, and low-quality storage. Regional markets and stocks are critical for agriculture's inclusion in GVCs. Locational attractiveness to foreign investors is also determined by the ease of access to efficient services and infrastructure, including access to energy (cheap and reliable), financial and trade support, telecommunications, and transport.

[1] This section draws largely on Ruta (2017).
[2] OECD. *Trade Policy Implications of Global Value Chains*, November 2015. https://www.oecd.org/tad/trade-policy-implications-gvc.pdf.
[3] This section draws on Taglioni and Winkler (2016).

17. All the value-added components of gross exports contribute positively to growth of gross exports, but the extent of the correlation varies by country and sector.[4] Econometric analysis correlates the growth rate of gross exports with the growth rates of the direct (intrasector) domestic value added, the indirect (upstream) domestic value added, and the foreign value added that are embodied in gross exports. In the overall sample of countries, growth of gross exports across all industries shows the highest correlation with growth in value added of the upstream domestic value adding functions embodied in gross exports, while growth of the foreign value component shows the weakest correlation (Figure 4). The results by individual industries, however, indicate that the growth of foreign content shows the highest correlation with growth of gross exports in the manufacturing sector, while the growth of (upstream) domestic value added in the services industries embodied in gross exports correlates the most in the services sector.

18. Services, in particular, have become a major determinant of competitiveness in GVCs. Countries with a higher content of services in the downstream economy are also those producing more complex goods. Recent data on trade in value added suggest that services represent about 30 percent of the value added in manufacturing exports. Figure 2 illustrates the services share of domestic value added embodied in gross exports as a percentage of gross exports in five manufacturing sectors by type of service input. But as not all countries are able to produce high-quality services themselves, it is crucial for them to rely on imported services.

Figure 2: Domestic value added of services embodied in manufacturing gross exports, overall, 2009



Source: Taglioni and Winkler (2016, p. 110). Data: OECD-WTO TiVA. The share of distribution does not include distribution services for final goods.

19. For developing countries wishing to participate more in GVCs and to upgrade, one of the obvious measures is to open up their services sectors to foreign and domestic competition and investment. Deregulation of services is expected to yield bigger gains compared to that of goods, as trade costs in services are much higher. A recent World Bank study finds that fewer regulatory restrictions in services are correlated with higher value added gains from sourcing services in GVCs from abroad. Entry barrier regulations have a stronger negative influence on the value added gains from sourcing foreign services value added (foreign links), while conduct/market regulations have a stronger negative effect on the value added gains from purchasing domestic services value added from upstream sectors (domestic links). Second, foreign direct investment regulations negatively influence the value added gains from sourcing

[4] The analysis is based on the OECD-WTO TiVA dataset which covers 61 OECD and non-OECD countries, 34 sectors (two primary sectors, 17 manufacturing sectors, 10 commercial services sectors, and five other services), and for 1995, 2000, 2005, and 2008 to 2011.

services value added. Differentiating between foreign and domestic services links shows that restrictions related to the movement of foreign key personnel (i.e. Mode 4 services under the General Agreement on Trade in Services) reduce the gains from domestic services links.

20. In a world dominated by complex and fragmented production processes, economic development can occur through economic upgrading and densification. Economic upgrading is largely about gaining competitiveness in higher value-added products, functions, and sectors via skills, capital, and process upgrading. Densification involves engaging more local actors (firms and workers) in the GVC network. In some cases, this could mean that performing lower value-added activities (or functions and tasks) on a larger scale can generate large value addition for the country. Raising domestic labor productivity and skills contributes to the overall goal to increase a country's value added as a result of GVC participation.

21. A GVC framework that classfies GVC data by business function can help address several industrial classficatioin issues, such as: Is a lead firm in manaufacturing or services industry if most of a lead firm direct value added in a compiling country is in its services—like R&D and design—but it controls and coordinates the production of a final good rather than a final service? Another important question is how to account for GVCs (such as in apparel) where lead firms do not actually own factories, but rely on sub-contractors around the globe and generate their value added mainly through branding (i.e. royalty and license fees). In industries in which production technology is standardized, for example apparel, footwear, airlines, and now even for computers, consumer electronics and even to some extent automobiles, branding is a key part of lead firm strategy.

22. Thus, the classification of GVC data into business functions has several policy implications[5]:

- Rather than focusing on certain industries only and favoring them over others (e.g. manufacturing over agriculture or services industries), the policy focus shifts to the business functions that a country is able to carry out in a GVC specific industry, those it wishes to carry out in the future, and measures to achieve functional upgrading in a specfic GVC industry.
- The attention given to tasks emphasizes the role of workers and skills. Countries will need to develop the needed talent through technical skills acquisition, and crucially, also soft skills (managerial skills, strong foreign-language skills, etc.). They also need to ensure that the link between productivity and distribution, and between economic and social impacts works. For GVC entrants, the focus on tasks means to lower barriers to knowledge, including to foreign skilled personnel and individual services, and also includes establishing strong intellectual property rights to attract technology-intensive foreign investors.
- At the same time, prioritizing business functions requires countries to match talents and services with the necessary infrastructure (physical, digital, and institutional) and cutting-edge technologies. GVC participation allows countries to absorb valuable foreign technology and know-how via imports and foreign direct investment. Increased connectivity—global and within a country—opens opportunities for economic upgrading and ensures that the development potential of technologies reaches a large fraction of the world population.

23. GVC participation is a necessary but not sufficient condition for development. From the perspective of a country's policy makers, the critical issue nowadays is how to effectively integrate a GVC-led development strategy with the whole economy and therefore how to maximize the benefits from technology transfers, knowledge spillovers, and increased value addition. Policy advice supporting GVC-

[5] Modified from Taglioni, Winkler, and Engel (2017).

based growth models requires sound analytics and data and a wide range of indicators and concepts. This helps governments put in place appropriate policies that support GVC integration and boost employment and productivity in agriculture, manufacturing, and services, while also improving worker well-being, social cohesion, and environmental sustainability.

24. Because policy-making depends on reliable and comparable GVC measures—both at the macro and micro level—the availability of more precise data will help inform the quality of analytical work and advisory services to help governments and their partners develop concrete economy-wide and sector-specific solutions.

25. An *overall country engagement strategy* of GVC participation consists of five components:

- Assessing the position in GVCs
- Using a strategic policy framework: participate, expand and sustain in GVCs
- Identifying the key policy objectives
- Identifying the key binding constraints, and
- Designing the necessary policy and regulatory interventions.

The components are intended to emphasize the main goals of a GVC country engagement strategy rather than representing a chronological order that should be followed.

26. The first component of an overall country engagement strategy of GVC participation is to provide a comprehensive, fact-based, and independent *preliminary assessment* of the country's trade competitiveness (particularly measured in value added), performance in GVC integration, and economic upgrading. This preliminary view is developed through a desk-based analysis followed by a field-based qualitative assessment and discussion of the identified challenges, opportunities, and policy options with local public and private sector stakeholders. The successful implementation of a full GVC diagnostics begins with effective planning and management, and an understanding of how this feeds into the overall country engagement strategy.

27. Planning should focus on the economy as a whole, but also zoom into key industries, strategic segments therein, and individual value chains (as narrowly defined as the availability of quantitative and qualitative information allows). A limited number of key industries (three or four) and/or industry specific GVCs (eight or nine)—existing ones that exemplify critical and/or broader opportunities and challenges, or new ones that are considered important by the local stakeholders, as well as subnational specificities—may also be identified at this stage for deeper analysis and discussion of challenges and opportunities. This provides a first-pass analysis of key industry- and GVC industry-specific issues, which can be the object of more focused and deeper assessments.

28. The second component of a country's GVC engagement strategy is to use a *suitable strategic policy framework*. How countries engage with GVCs determines how much they benefit from them. And while policy needs to adapt to a rapidly changing world, it remains valid that, for an effective and sustainable strategy of GVC participation, some areas of policy remain key. Identifying the country-specific binding constraints and designing the necessary policy and regulatory interventions will help achieve distinct objectives to:

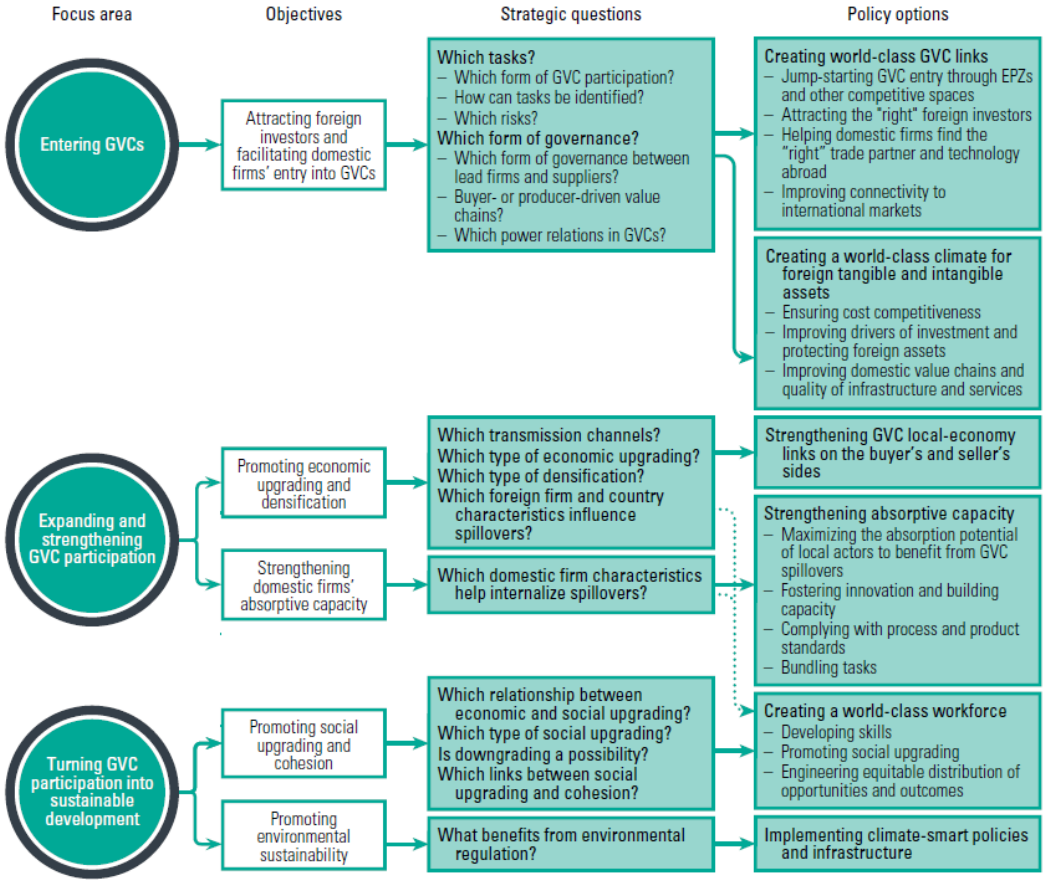
- Participate in GVCs, including attracting foreign direct investment and facilitating domestic firm entry into GVCs.
- Expand and strengthen existing GVC participation, including promoting economic upgrading and densification, and strengthening domestic firms' absorptive capacity.
- Ensure sustainability and transform GVC participation into inclusive growth by fostering economy-wide productivity spillovers, social upgrading, and welfare improvements.

29. By integrating their domestic firms (suppliers and final producers) into GVCs, developing countries can help their economies industrialize, become services-oriented more quickly, and move closer to their development goals. Taglioni and Winkler (2016) developed a strategic policy framework that can be used to assess various aspects of GVC participation and, thus, how to identify key policy needs. The framework suggests "strategic questions" and approaches to addressing such policy needs and offers "policy options." These are summarized in Figure 4 and discussed in more detail in the following sections.

30. Identifying a country's position in GVCs from a macro and micro-level perspective is a prerequisite to formulating its *key policy objectives* with regard to integration and upgrading in GVCs—which is the third component of a country engagement strategy. This, in turn, helps policy makers identify effective solutions, i.e., suitable strategies to achieve these objectives and the binding constraints in a country. While the typical sequence would be to first focus on entry and then on economic upgrading in GVCs, it is also important for countries to ensure sustainability and transform GVC participation into inclusive growth along the way.

31. "Entering GVCs" (first focus area in Figure 3) discusses ways for countries to enter global production networks. Those avenues include ways to attract foreign investors, as well as strategies to enhance the participation of domestic firms in GVCs. GVC entry is the key focus area for concentrated agricultural and commodity sellers which have not yet joined GVCs. Reflecting their comparative advantage, agricultural and commodity sellers tend to enter GVCs in industries of limited complexity, such as agriculture and low-skill manufacturing. Suggestions for entering GVCs encompass measures to ensure that the country can offer world-class connectivity to the global economy and create a friendly business climate for foreign tangible and intangible assets.

Figure 3: A strategic policy framework for making GVCs work for development



Source: Taglioni and Winkler (2016, p. 5). EPZs = export processing zones.

32. However, GVC participation is a necessary but not sufficient condition for development. Although GVCs open doors, they are not magical. Most of the hard work still has to be done at home, with domestic pro-investment, pro-skills, pro-jobs, and pro-growth reforms. Creating demand for high-productivity workers must be matched with a supply of capable workers who have the relevant skills. In other words, when thinking about the first step in facilitating GVC entry, policy makers must have a clear road map of how entry will lead to strengthened and broader participation and economic and social upgrading. Policy makers must keep a keen eye on the workforce's competencies and how they match up with foreign investment.

33. Expanding and strengthening participation in GVCs requires countries to lever their position and enhance domestic production, achieving higher value addition through economic upgrading and densification. The concept of economic upgrading is largely about gaining competitiveness in higher value-added processes, products, tasks, and sectors. Densification involves engaging more local actors (firms and workers) in the GVC network. Strengthening GVC–local economy links, absorptive capacity, and skills contributes to the overall goal to increase a country's value added that results from GVC participation.

34. For countries that have successfully entered GVCs, a "typical" upgrading trajectory is to become a buyer that is either strongly specialized in agriculture or increasingly in manufacturing. The next step is to start specializing in advanced manufacturing tasks and/or professional, modern services, including pre-

and post-production high value-added services. Countries who have successfully accomplished this goal are manufacturing buyers with a larger share of services in their domestic value added. For those countries, the quality of education and availability of skills becomes increasingly relevant.

35. The last upgrading step for many manufacturing buyers is to become a manufacturing seller of the final product of the GVC. Their engagement in GVCs is predominantly specialized in tasks of coordination, and high value-added services, such as R&D and branding. Firms are primarily buyers of inputs and components and sellers to end markets, and/or engaged in modular relationships. These firms' comparative advantage is based on offering highly specialized products, at the technology frontier, which requires strong innovation capacity.

36. Finally, countries also need to tackle the challenge of turning GVC participation into sustainable development. Three areas of sustainable development are important: macroeconomic sustainability, social sustainability and environmental sustainability. Not only are they important development objectives per se, but they also ensure the sustainability of a GVC-centric approach to development. Labor market-enhancing outcomes for workers at home and more equitable distribution of opportunities and outcomes create social support for a reform agenda aimed at strengthening a country's GVC participation. Climate-smart policy prescriptions can mitigate the challenges for firms from climatic disruptions, as those firms seek to ensure the long-term predictability, reliability, and time-sensitive delivery of goods necessary to participate in global value chains. Because climatic disruption can impair firms' ability to access inputs and deliver final products, countries' preparedness is an increasingly critical factor in firms' location decisions.

37. The fourth component involves investigation of possible *binding constraints and solutions*. A country's GVC engagement strategy needs to take into account the role of institutional characteristics and policy indicators, including the business and investment climate and drivers of competitiveness across economic, regulatory, operational, and infrastructural dimensions, when assessing the benefits of GVC integration. This exercise allows to detect areas for improvement to achieve the defined policy objective.

38. What are the key institutional and policy characteristics that help countries achieve their chosen policy objectives? The strategic policy framework in Figure 3 identifies policy options that are relevant for different policy objectives. Identifying the key binding constraints to integration and economic upgrading requires developing a sound theoretical model. However, initial insights can also be gathered by screening a country's performance of selected indicators and comparing it against peer or benchmark countries, and assessing the statistical correlation between measures of GVC integration with these indicators. To guide policy makers in prioritizing policies, Table 2 lists performance indicators that can be used to identify the most important challenges that a country must address.

Table 2: Selected policy objectives and performance indicators by focus area

Focus area	Policy options	Selected performance indicators
Entering GVCs	Improving connectivity to international markets	LPI (international)—overall and components; efficiency of customs (WDI)
	Ensuring cost competitiveness	Unit labor costs
	Improving drivers of investment	Ease of doing business index—overall (WDI)
	Protecting assets	Ease of doing business index—protecting investors (WDI)
	Improving domestic value chains and quality of infrastructure and services	LPI (domestic)—quality of infrastructure, quality and competence of services (WDI)
Expanding and strengthening GVC participation	Fostering innovation and building capacity	R&D intensity
	Complying with process and product standards	Diffusion of voluntary standards and ISO certification ownership (WDI, national statistics); surveys/field assessments in country
Turning GVC participation into sustainable development	Developing skills	Education statistics
	Promoting social upgrading	Wage statistics; employment statistics; labor standards
	Engineering equitable distribution of opportunities and outcomes	Indicators on access to information; antidiscrimination laws and rights; social insurance and assistance

Source: Taglioni and Winkler (2016, p. 6). ISO = International Organization for Standardization; LPI = Logistics Performance Index; R&D = research and development; WDI = World Development Indicators.
In addition, the WBG has developed a model that can be used to identify which policies magnify the value-added gains from GVC integration (see Box 1).

39. *Policy and regulatory interventions* in a wide range of influencing areas will determine success in GVC participation and upgrading. Those areas are as different as trade and trade policy, domestic services regulations, investment regulations and incentives, compliance with process and product standards, innovation, industry, entrepreneurship, labor markets, education, and infrastructure and connectivity. Synergies should be created between these multiple interventions. Moreover, long-lasting engagement with a variety of national and GVC partner country stakeholders should be fostered for implementing a national and regional strategy to achieve GVC-led development.

40. This includes establishing the model of country engagement and the appropriate instititutional setting for identification of strategies in GVCs that offer the promise of the highest value-added growth. Participants can be selected from relevant public institutions, including ministries of economy; ministries in charge of entrepreneurship and domestic economic development; national and subnational agencies for the promotion of trade, investment, and competitiveness; chambers of commerce; associations of employers; regional development agencies; etc.

41. It it important to create a detailed road map for starting to implement reforms. For example, a possible strategy could be to identify a list of four to six major initiatives to maximize shared value added in incorporating global best practices and placing a priority on “quick wins.” Various governance models can be used for designing the appropriate institutional setting—for instance, by establishing a working group to work closely with the president’s or prime minister’s office, or by devising a plan for strengthening the coordinating mandate of one key ministry.

42. The execution phase of interventions includes revising regulations, reengineering processes, and investing in infrastructure to achieve measurable improvements across all key dimensions and areas of binding constraint identified at the macro and micro levels.

D. Tax Policy

43. Among the most important strategic issue to be considered by global enterprise group is the overall taxation burden of group multinational enterprises. The lead firm could use corporate inversions, use of special purpose entities, transfer pricing, and sale of intellectual property to lower domestic taxes by redirecting income to lower tax foreign jurisdictions. Over time, as tariffs, transport costs, and barriers to capital flows fell and global trade and competition grew, the importance of taxes and lower input costs in FDI location decisions appears to have increased.

44. The growing share of foreign direct investment in lower tax countries and jurisdictions, falling effective tax rates on corporate income, and high-profile restructuring of multinational corporations of their legal units owning their intellectual property products to significantly lower their effective tax rates have justifiably resulted in international calls for changes in tax codes to curtail such tax avoidance behavior. However, as the value-added data suggest, there are very large value-added benefits to parent-company countries that should be taken account in designing international tax policy. Much of the final sales value for such products is in the form of domestic services and profits that can be taxed. Changes in tax law that ignored these benefits might not only reduce (rather than raise) net domestic tax receipts, but lower domestic production and employment. More detailed data on domestic value-added derived from globally produced imports would provide the basis for more complete analysis of net revenue losses from alternative tax treatments of foreign source income.

45. Such data will be helpful as policymakers consider such tax reforms as:

- Lowering the corporate rate (near the rates in several tax havens), to reduce the incentive for MNEs to move offshore to lower tax jurisdictions.
- Moving from a worldwide to a territorial tax system, where domestic corporations would not be taxed on their overseas income, thereby eliminating the incentive for corporate inversions.
- Adopting a destination-based tax that would tax all goods and services consumed domestically. This system would effectively tax imports but not exports and is often described as a border adjustment tax.
- Disallowing the deduction of interest on debt so as to put debt and equity on an equal footing and reduce the incentive toward excessive use of debt (and the risks associated with too much debt). This change would also remove the ability of MNEs to use “interest stripping” to reallocate income to foreign subsidiaries in lower tax countries as part of corporate inversions

46. Data from GVC accounts that cover both corporate and noncorporate data can be used to assess the impact of tax changes on different corporate structures. Such extended accounts differ from tax-based data where filing is contingent on reparations and provide the complete overseas activities data every year on domestic and overseas operations, investment, income, distribution, financing, assets, and liabilities. They would also provide data on the effective tax rates actually paid by MNEs, which provide better estimates of the effect of changes in statutory tax rates. GVC accounts also provide information on all taxes – direct and indirect (excise and value-added taxes). As a result, they provide a more complete set of data that can be used as control variables to disentangle tax from other effects.

47. Further, more complete analysis of the impact of alternative tax policies would also be provided by integrated financial accounts that allow tax analysts to look behind the existing --mainly counterparty

data -- to examine the ultimate ownership of assets and liabilities. Such information would facilitate the analysis of the true impact of taxes on international direct and portfolio investment flows.

E. Financial Regulation

48. GVCs and the financial system that supports them, have revealed gaps in the existing international financial statistics. In addition to gaps and inaccuracies, concerns about the transmission of operational risks across partner countries in GVCs associated with multi-national non-financial affiliate enterprises and financial institutions has prompted calls for GVC financial accounts and balance sheet data that provide breakouts and detail for financial assets and liability positions in GVC global enterprise groups and their relationship with foreign and domestic financial institutions.

49. One of the key recommendations for measurement that came out of the G-20 and other analyses of the financial crisis was for more comprehensive financial data that could provide regulators a more integrated picture of systemic risk in the global financial system. Integrated and up to date financial accounts based on ultimate creditors and debtors would enable global regulators to better assess the relative levels and transmission of risk and the management of that risk.

50. Transactions and position data in GVC accounts can provide more accurate and timely data for guiding monetary and financial regulatory policy. More accurate identification of ultimate ownership can aid in assessing systemic risk, the transmission of risk through capital flows by partner country and region, and the impact of regulatory changes across countries and across domestic versus foreign owned banks.

51. Specific areas that can benefit from more detailed, integrated accounts are portfolio investment statistics, which traditionally have recorded transactions with the first cross-border counter party, which is often not the country of the ultimate buyer or actual seller or issuer of the security. Rather, portfolio investment statistics that are based on country of issuer, country of holder, or ultimate beneficial owners for foreign direct investment, can allow policymakers to correctly identify counterparties that are brokers and dealers (often of MNES) acting on behalf of companies and investors, in other countries.

52. Moreover, more detailed international transactions data that fully record transactions made on behalf of foreign official investors will help authorities to assess changes in official versus private purchases of assets. Finally, extended transactions data that capture transactions and positions that do not go through standard broker dealer channels, or where assets are held by foreign investment managers or global custodians, would provide more comprehensive information to financial market policymakers.

53. Likewise, foreign direct investment may be channeled through financial centers or through a number of affiliates in several different countries. While in many countires, the country of the ultimate beneficial owner of a MNE is also the country of the foreign parent. However, for some countries such as Luxembourg, Switzerland, and the Netherlands their investment positions are higher on the Parent- than the UBO-basis. Efforts to disentangling the country of the entity that ultimately owns or controls a subsidiary (Ultimate Beneficial Owner) can be facilitated by profiling large multinational enterprises (see Part II) and global initiatives to register multinational enterprise groups, such as the UNSD-Eurostat Global Groups Register (see Part III), the G-20 Global Legal Entity Identifier Foundation (GLEIF), and the OECD Analytical Database on Individual Multinationals and their Affiliates (ADIMA).

F. Macroeconomic Policy

54. The data lessons learned from the financial crisis are not only important for financial oversight and regulation, but also for macroeconomic policy. Until the financial crisis, macro-economists focused much of their research and policy on the real sector. The global financial crisis refocused attention on the role of debt, asset values, liabilities, and global interdependencies on national and global business cycles. After the financial crisis, macro-prudential and other policies focusing on globally coordinated macroeconomic policies received much attention.

55. Beyond better integrated global financial and real data, one of the most important measurement challenges posed by globalization that is important for macroeconomic policy are biases in import prices. These biases can have a significant distorting impact on measures of inflation and growth used as targets by monetary authorities and by fiscal authorities for budget projections used in evaluating alternative budget proposals and policies.

56. There is a body of research (Houseman and Ryder, 2010) which suggests that domestic survey data fail to capture price reductions when domestic producers switch from domestic to imported inputs. This bias, in turn, understates real imports and overstates real GDP and productivity growth, especially in the manufacturing sector.

57. Moreover, integrated trade and business statistics, for instance linking trade data to enterprise size class and by export destination, can reveal large differences between trading activities of firms of different size classes that can impact on macroeconomic measures (e.g., as the evidence points clearly to smaller firms exporting disproportionately within neighbouring countries and with countries where trade agreements exist) compared to larger firms.

58. A focus on direct investment ownership dimensions is also crucial for policy reasons. To fully understand the nature of GVCs and indeed their drivers, it is important to create a trade-investment story that is largely driven by multinationals (MNEs). Moreover, the share of value-added generated by foreign affiliates approaches around half of all business sector value-added in some countries. Indeed more recently it has begun to raise questions about the meaningfulness of GDP itself as a tool for macro-economic policy making. In fact, in some countries where foreign affiliates generate significant value-added and repatriate significant profits back to parent companies, the policy focus has switched from GDP to GNI.

G. The Impacts of Offshoring on Labor Markets and Welfare

59. The import proportionality assumption used in conventional supply-use tables, whereby an input used in an industry has the same ratio of imports to domestically-sourced value as does the economy as a whole, can be improved by having firm-level import data and/or price-based measures of imported input use.[6] According to Feenstra, such improved statistics are particularly important when evaluating whether offshoring leads to real losses for low-skilled labor, beyond just changes in the relative wage. Moreover, Feenstra notes that statistics such as the share of imported input in costs must be supplemented with

[6] See for example, R. Feenstra, Statistics to Measure Offshoring and its Impact. NBER Working Paper No. 23067, Jan 2017.

descriptions of job characteristics[7] in order to determine the tradability of various tasks or occupations. Feenstra further suggests that price-based measures of offshoring are needed to infer the impact of offshoring particularly on aggregate real GDP. The future research agenda will also likely focus on explaining how offshoring affects the inequality of earnings, building on existing work based on heterogeneous-firm models that show that opening trade can lead to greater wage inequality within sectors, while increasing welfare overall.[8]

The process of GVC-induced growth entails the reallocation of workers to more productive activities, and this can mean that, even as average employment conditions improve, some workers may experience unemployment or may see their real wages decline. Facilitating the adjustment process is crucial, and requires well-designed social policies and a well-functioning labour market. Effective re-employment services and training programmes can help dislocated workers take advantage of new job opportunities.

H. Environmental and Energy Policies

I. Security Policies for Critical Materials, Food Safety, and National Security

[7] Feenstra cites the O*NET database, which provides information on job characteristics for 812 occupations. https://www.onetonline.org/. R. Feenstra, Statistics to Measure Offshoring and its Impact. NBER Working Paper No. 23067, Jan 2017.

[8] Melitz, Marc, 2003, "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity," Econometrica, 71(6), November, 1695-1725. Helpman, Elhanan, Oleg Itskhoki and Stephen Redding, 2010, "Inequality and Unemployment in a Global Economy," Econometrica, 78(4), 1239-1283. Helpman, Elhanan, Oleg Itkhoki and Stephen Redding, 2013, "Trade and Labor Market Outcomes," in Advances in Economics and Econometrics, Vol, 2, edited by Daran Acemoglu, Manuel Arellano and Eddie Dekel, Econometric Society. Helpman, Elhanan, Oleg Itkhoki, Marc Muendler and Stephen Redding, 2016, "Trade and Inequality: From Theory to Estimation," Review of Economics and Statistics, forthcoming.