# Trade in Value Added (TiVA) in the APEC Region: Evolution of Indicators on GVCs

APEC Committee on Trade and Investment

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Asia-Pacific Economic Cooperation

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## 1. Background

In 2014, under the leadership of China and the United States, APEC initiated the compilation work on the Trade in Value Added Database covering 21 APEC economies (APEC TiVA database), aiming to thoroughly study Global Value Chains (GVCs). Over the following years, activities were conducted by a Technical Team that oversaw the development of technical capacities of the economies and the compilation of trade in value added statistics.

During this period, organizations such as the Asian Development Bank (ADB), the World Trade Organization (WTO), the United Nations (UN), and the Organization for Economic Co-operation and Development (OECD) were involved in the training processes.

As a result, in November 2019, APEC published its first report showing the methodology of constructing its most significant legacy: the APEC TiVA database.[1] This report showcased all the work done since the project's inception and introduced the main indicators.

A second report was presented in 2021[2], which delved deeper into the APEC-TiVA database. It also included applications in Global Value Chain analysis in the APEC region, as well as reports by the 21 APEC economies, comparing data between 2005 and 2012.

Trade in value added is a byproduct from the analysis of international input-output tables. These tables record the production structure of an economy and show the input requirements of each sector, which can be domestic or foreign requirements. By combining input-output tables from different economies, a global one can be obtained, where bilateral trade flows end up linking the foreign requirements of each sector of each economy, providing a better understanding of the trade links between and among trading partners.

The Trade in Value Added database developed by the OECD (OECD-TiVA) aims primarily to break down gross exports into their domestic and imported value-added components. This effort continues with the achievements made with the APEC-TiVA database, providing updated information annually for the analysis of GVCs.

It compiles information from input-output tables of 76 economies, including all OECD members, the European Union, and G20, as well as a selection of East and Southeast Asian economies and some South American economies, considering some APEC members and APEC region as a whole within the sample. It covers 45 industrial sectors, including an aggregate total of manufacturing and services.

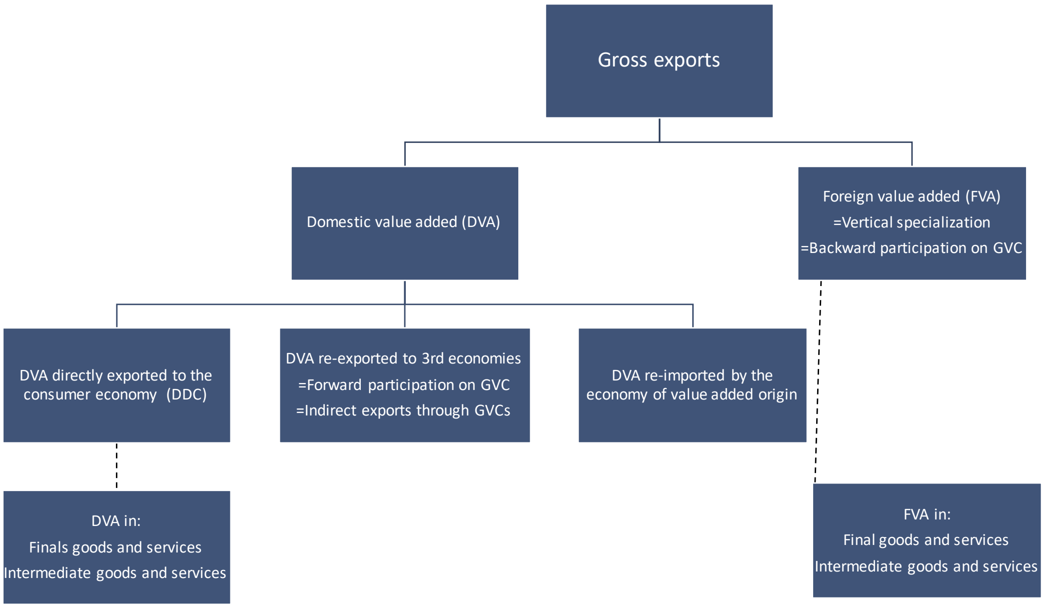
In December 2023, the 2023 edition of this database was presented[3], containing indicators for the period between 1995-2020. This first data block available on *OECD.Stat* allows us to evaluate the performance and position of APEC within Global Value Chains (GVCs). Due to the availability of an extensive series of annual data (1995-2020), as well as the availability of information of the APEC region in the database, the OECD database is used as the primary source instead of the APEC database, which only has information for two periods.

[1] APEC (2019).
[2] APEC (2021).
[3] OECD (2023).

The present work analyzes the performance of the APEC bloc as a single region, rather than as the sum of all its constituent economies, with the calculation of the main indicators based on this principle. In this sense, this work does not focus on the participation of the supply chains within the APEC region, but rather on how APEC, as a bloc, participates in the global value chains with the rest of the world.

As show in figure 1, the whole work on TiVA statistics focuses on breaking down gross exports into their value-added components, allowing exports to be analyzed based on their domestic and foreign value-added content in exports. This approach identifies the origin sources of value-added. Additionally, domestic value-added is explained by direct value-added and indirect value-added, as well as domestic value added re-imported.

**Figure 1. Decomposition of Exports in Value Added**




Source: Adapted from Koopman et al. (2014)

## 2. Key Indicators (2023)

In this section, we will explore the relevant indicators available in the OECD-TiVA database, comparing changes between 1995, 2000, 2005, 2010, 2015, and 2020, covering the last 25 years.

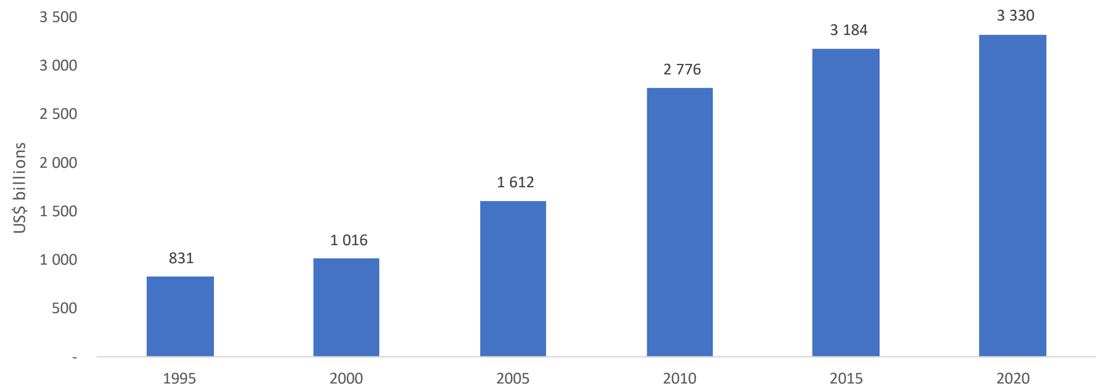
### 2.1. Gross Exports (EXGR)

Gross exports are derived from the sum of the international trade flow column in the OECD international input-output table. These values are consistent with the official estimates made for the "National Accounts" (SNA08) of exports and imports of goods and services, adjusted for re-exports. The values are presented at basic prices rather than purchaser prices, as they typically appear in the "National Accounts".

The calculation corresponding to the APEC region in the OECD database assumes that the corresponding flows of gross exports are directed to non-APEC members. For this reason, the sum of the exports of each APEC member does not represent the total exported by APEC. The gross exports shown here correspond to the exports of each member to non-APEC economies, thus avoiding double counting.

In 1995, APEC had a total of USD 831 billion in gross exports (goods and services). By 2005, gross exports grew at an average annual rate of 7.6%, reaching USD 1,612 billion. Between 2005 and 2015, gross exports grew at 7.9% annually. Finally, between 2010 and 2020, gross exports grew at an average annual rate of 2.0%, reaching a value of USD 3,330 billion.

**Figure 2. Gross Exports of the APEC Region, 1995-2020 (USD billions)**




Source: OECD-TiVA (2023)

APEC exports have been primarily characterized by being composed of the *Manufacturing* sector, representing an average share of 54.4% of total gross exports between 1995 and 2020. *Business Services*[4] was in the second place, with a share of 37.7% in the same period, followed by the *Mining and Quarrying* sector, with a share of 4.4%, and *Agriculture, Hunting, Forestry, and Fishing* with 1.7%.[5]

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[4] *Business Sector Services* are composed of Distribution, Transport, Accommodation and Food Services; Information and Communication; Financial and Insurance Services; Real Estate Activities; and Other Business Sector Services.

[5] The remaining 2% corresponds to the participation of the Construction sectors; Electricity, Gas, Water Supply, and Sewerage Activities; and Public Administration, Education, Health, and Other Personal Services.

Over these 25 years, there has been an increase in the share of the *Services* sector, rising from 37% of total gross exports in 1995 to 40% in 2020. On the other hand, the share of exports of *Manufacturing* have decreased by three percentage points, dropping from 57% in 1995 to 54% in 2020. Additionally, there has been a 30% increase in the share of the *Mining* sector, which, represented an average share of 4.4% of total gross exports, between 1995 and 2020. Finally, the share of *Agriculture, Hunting, Forestry, and Fishing* sector increased by 3% in the analyze period, despite maintaining the lowest average share of gross exports among the four mentioned sectors, with 1.7%,

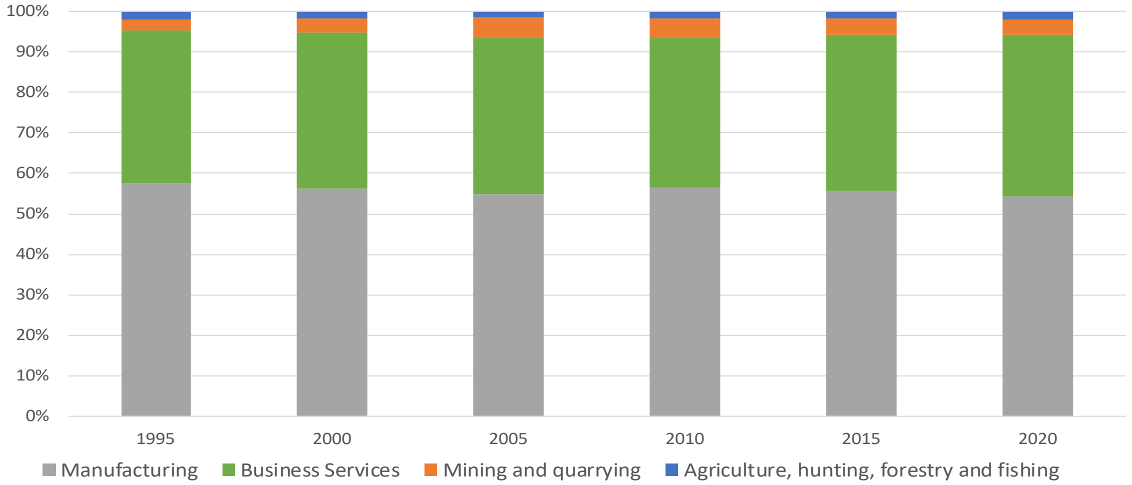
The Services sector has demonstrated resilience during economic crises. This resilience, combined with the intangibility and ease with which services can cross borders, opens up possibilities for growth even in adverse environments.

**Table 1. Gross Exports by Industry in APEC (USD Millions)**

| EXGR: Gross exports | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|---|
| Total | 831 276 | 1 015 640 | 1 612 420 | 2 776 058 | 3 183 551 | 3 330 080 |
| **Agriculture, hunting, forestry and fishing** | **14 917** | **17 315** | **23 928** | **49 132** | **53 017** | **61 370** |
| *Agriculture, hunting, forestry* | *14 406* | *16 498* | *22 297* | *46 983* | *50 399* | *59 643* |
| *Fishing and aquaculture* | *510* | *816* | *1 632* | *2 149* | *2 618* | *1 727* |
| **Mining and quarrying** | **24 019** | **35 236** | **81 341** | **127 729** | **123 115** | **125 258** |
| *Mining and quarrying, energy producing products* | *12 408* | *24 197* | *58 837* | *87 799* | *91 439* | *101 917* |
| *Mining and quarrying, non-energy producing products* | *10 249* | *10 092* | *20 611* | *35 629* | *26 160* | *19 768* |
| *Mining support service activities* | *1 363* | *947* | *1 894* | *4 301* | *5 516* | *3 573* |
| **Manufacturing** | **469 934** | **556 791** | **865 280** | **1 537 518** | **1 748 285** | **1 788 671** |
| *Food products, beverages and tobacco* | *27 986* | *29 262* | *43 525* | *87 147* | *104 379* | *99 527* |
| *Textiles, wearing apparel, leather and related products* | *31 190* | *38 072* | *66 161* | *103 485* | *142 763* | *157 025* |
| *Wood and paper products and printing* | *20 424* | *20 497* | *25 606* | *33 286* | *36 180* | *34 552* |
| *Chemicals and non-metallic mineral products* | *80 989* | *98 922* | *187 547* | *336 674* | *374 605* | *381 639* |
| *Basic metals and fabricated metal products* | *34 731* | *38 644* | *73 946* | *144 459* | *160 382* | *164 991* |
| *Computer, electronic and electrical equipment* | *133 715* | *160 060* | *207 555* | *345 025* | *390 730* | *461 811* |
| *Machinery and equipment n.e.c* | *51 978* | *59 829* | *83 479* | *147 766* | *170 975* | *168 452* |
| *Transport equipment* | *75 437* | *95 167* | *150 832* | *278 190* | *286 712* | *234 572* |
| *Manufacturing nec; repair and installation of machinery and* | *13 483* | *16 340* | *26 628* | *61 486* | *81 559* | *86 103* |
| **Electricity, gas, water supply, sewerage, waste and remediation activities** | **1 210** | **1 586** | **2 405** | **3 626** | **3 093** | **3 203** |
| **Construction** | **135** | **274** | **709** | **2 024** | **1 802** | **1 562** |
| **Business Services** | **305 852** | **381 979** | **608 900** | **1 011 650** | **1 212 521** | **1 318 378** |
| *Distributive trade, transport, accommodation and food services* | *198 211* | *234 730* | *358 303* | *573 975* | *637 293* | *622 025* |
| *Information and communication* | *24 122* | *31 790* | *49 146* | *83 381* | *119 611* | *151 011* |
| *Financial and insurance activities* | *32 142* | *49 007* | *82 873* | *133 565* | *192 704* | *235 390* |
| *Real estate activities* | *6 033* | *7 133* | *9 691* | *14 548* | *15 563* | *10 008* |
| *Other business services* | *45 345* | *59 319* | *108 887* | *206 181* | *247 351* | *299 945* |
| **Total services** | **321 062** | **404 438** | **638 756** | **1 056 030** | **1 254 240** | **1 350 016** |

Source: OECD-TiVA (2023

**Figure 3. Composition of Gross Exports in APEC, 1995-2020**




Source: OECD-TiVA (2023)

### 2.2. Domestic value added content of gross exports (EXGR DVA)

Domestic value added (DVA) content of gross exports represents the exported value added generated in any part of the domestic economy. It is broken down into two components: direct domestic value added and indirect domestic value added.

The DVA component largely explains the level of gross exports. Over this 25-year period, an average share of 93.6% is observed.

In 1995, APEC had a total of USD 794 billion in DVA contained in exports (goods and services). By 2005, the DVA contained in exports grew at an average annual rate of 7.3%, reaching USD 963 billion. Between 2005 and 2015, the DVA contained in gross exports grew by 8.0% annually (USD 2 986 billion in 2015). Finally, between 2010 and 2020, the DVA contained in gross exports grew at an average annual rate of 2.0%, reaching a value of USD 3,133 billion.

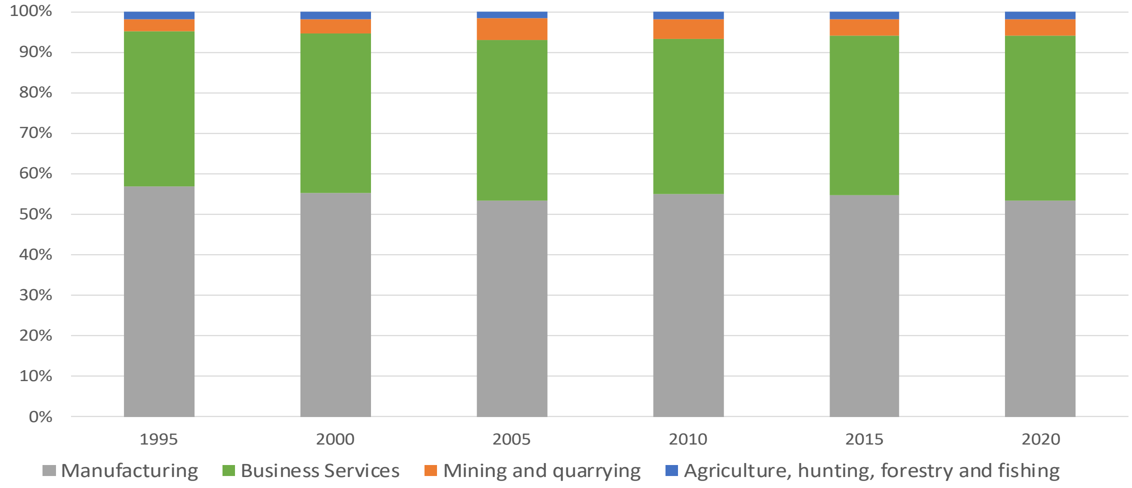
Over these 25 years, the *Services* sector has increased its share in DVA, rising from 37% in 1995 to 40% in 2020. On the other hand, the share of *Manufacturing* in DVA contained in exports have declined by 3 percentage points, dropping from 56% in 1995 to 53% in 2020. Additionally, there has been an increase in the share of the *Mining* sector, which, grew by 31% between 1995 and 2000 despite representing on average 4.3% of the DVA in gross exports. Finally, the *Agriculture, Hunting, Forestry, and Fishing* sector maintains the lowest average share in DVA of gross exports among the four sectors mentioned, with an average of 1.8%, and an increase of 3% over the analyzed period.

**Table 2. Domestic value added content of gross exports in APEC (USD millions)**

| EXGR_DVA: Domestic value added content of gross exports | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|---|
| Total | 793 785 | 962 845 | 1 499 678 | 2 568 538 | 2 986 098 | 3 133 042 |
| **Agriculture, hunting, forestry and fishing** | **14 321** | **16 569** | **22 629** | **46 517** | **50 361** | **58 253** |
| *Agriculture, hunting, forestry* | **13 827** | **15 786** | **21 108** | **44 468** | **47 862** | **56 606** |
| *Fishing and aquaculture* | **495** | **783** | **1 521** | **2 049** | **2 499** | **1 647** |
| **Mining and quarrying** | **23 309** | **34 127** | **78 620** | **122 951** | **119 298** | **120 832** |
| *Mining and quarrying, energy producing products* | **12 140** | **23 638** | **57 149** | **84 773** | **88 904** | **98 302** |
| *Mining and quarrying, non-energy producing products* | **9 861** | **9 593** | **19 731** | **34 157** | **25 171** | **19 174** |
| *Mining support service activities* | **1 308** | **896** | **1 739** | **4 021** | **5 224** | **3 356** |
| **Manufacturing** | **443 239** | **519 229** | **784 838** | **1 386 764** | **1 610 424** | **1 655 671** |
| *Food products, beverages and tobacco* | *26 479* | *27 596* | *40 305* | *81 103* | *97 623* | *93 229* |
| *Textiles, wearing apparel, leather and related products* | *29 201* | *35 607* | *61 185* | *97 091* | *135 782* | *149 650* |
| *Wood and paper products and printing* | *19 367* | *19 160* | *23 574* | *30 829* | *33 980* | *32 528* |
| *Chemicals and non-metallic mineral products* | *75 329* | *90 158* | *162 597* | *285 253* | *333 330* | *342 470* |
| *Basic metals and fabricated metal products* | *32 198* | *35 393* | *66 567* | *128 605* | *146 401* | *151 389* |
| *Computer, electronic and electrical equipment* | *127 231* | *150 554* | *190 386* | *315 986* | *364 353* | *431 088* |
| *Machinery and equipment n.e.c* | *49 489* | *56 374* | *76 878* | *135 853* | *158 996* | *157 019* |
| *Transport equipment* | *71 184* | *88 931* | *138 676* | *254 926* | *263 591* | *217 746* |
| *Manufacturing nec; repair and installation of machinery and* | *12 762* | *15 457* | *24 669* | *57 119* | *76 368* | *80 552* |
| **Electricity, gas, water supply, sewerage, waste and remediation activities** | **1 169** | **1 487** | **2 196** | **3 414** | **2 922** | **3 032** |
| **Construction** | **129** | **259** | **658** | **1 871** | **1 676** | **1 467** |
| **Business Services** | **296 662** | **369 161** | **581 714** | **963 969** | **1 160 754** | **1 262 815** |
| *Distributive trade, transport, accommodation and food services* | *191 038* | *225 239* | *338 420* | *541 133* | *603 649* | *588 283* |
| *Information and communication* | *23 600* | *30 907* | *47 633* | *80 283* | *115 497* | *144 626* |
| *Financial and insurance activities* | *31 518* | *47 863* | *80 391* | *128 204* | *186 076* | *227 984* |
| *Real estate activities* | *5 960* | *7 048* | *9 523* | *14 300* | *15 315* | *9 870* |
| *Other business services* | *44 547* | *58 104* | *105 749* | *200 049* | *240 218* | *292 052* |
| **Total services** | **311 618** | **391 175** | **610 737** | **1 007 020** | **1 201 419** | **1 293 787** |

Source: OECD-TiVA (2023)

**Figure 4. Composition of domestic value added of gross exports in APEC, 1995-2020**




Fuente: OECD-TIVA (2023)

### 2.2.1. Direct domestic value added content of gross exports (EXGR DDC)

According to the OECD (2023), direct domestic value added (DDC) content of exports, measures the direct value added contribution made by industry *i* in-country c to the production of goods and services exported by industry *i* to the world. These are goods and services exported to the consuming economy.

The direct domestic value added (DDC) component explains nearly half of the level of gross exports. Over this 25-year period, it shows an average contribution of 48.8% of APEC total exports. In the APEC region, DDC represents 52.1% of Domestic Value Added, that is, the contribution of the domestic industry.

In 1995, APEC had a total of USD 425 billion in DDC content in exports (goods and services). By 2005, DDC in exports grew at an average annual rate of 7.3%, reaching USD 802 billion. Between 2005 and 2015, DDC in gross exports grew by 7.0% (USD 1 474 billion in 2015). Finally, between 2010 and 2020, DDC in gross exports grew at an average annual rate of 2.1%, reaching USD 1,573 billion.

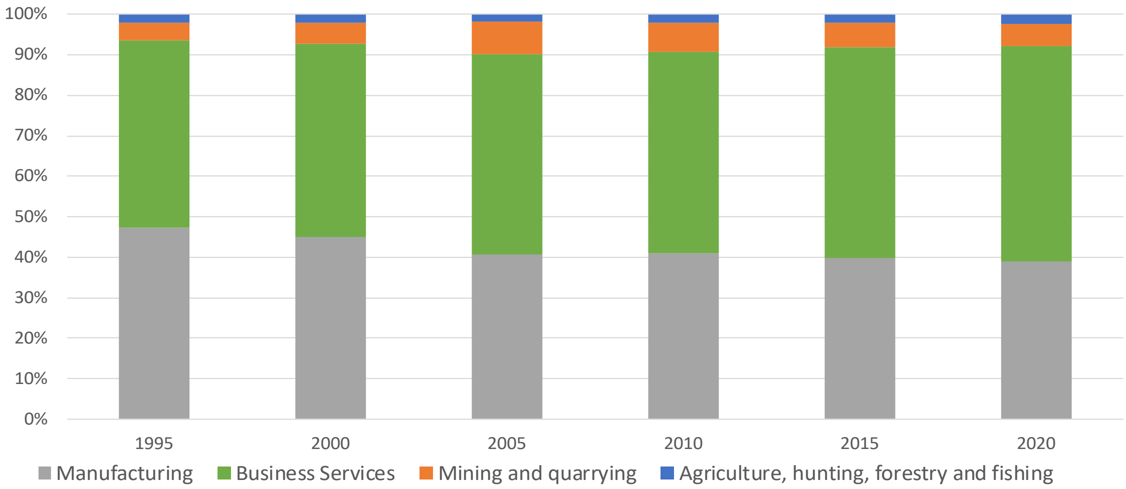
Over these 25 years, we observe the *Services* sector increasing its DDC share, from 45% in 1995 to 52% in 2020. Conversely, *Manufactures* share in DDC have decreased by 8 percentage points, from 46% in 1995 to 38% in 2020. Additionally, there has been an increase in the *Mining* sector's share; although its average participation is 6.3%, it grew by 33% between 1995 and 2000. Finally, the *Agriculture, hunting, forestry, and fishing* sector maintains the lowest average share among the four sectors mentioned, at 2.1%, with an increase of 10.8% over the analyzed period.

**Table 3. Direct domestic value added content of gross exports in APEC (USD millions)**

| EXGR_DDC: Direct domestic value added content of gross exports | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|---|
| Total | 425 448 | 518 950 | 802 085 | 1 309 291 | 1 474 448 | 1 573 696 |
| **Agriculture, hunting, forestry and fishing** | **8 452** | **10 204** | **14 397** | **28 392** | **30 908** | **34 627** |
| *Agriculture, hunting, forestry* | 8 089 | 9 608 | 13 395 | 26 828 | 29 180 | 33 505 |
| *Fishing and aquaculture* | 363 | 596 | 1 002 | 1 565 | 1 728 | 1 121 |
| **Mining and quarrying** | **17 425** | **26 446** | **62 697** | **91 746** | **87 894** | **85 740** |
| *Mining and quarrying, energy producing products* | 9 977 | 19 817 | 47 582 | 64 579 | 68 655 | 70 324 |
| *Mining and quarrying, non-energy producing products* | 6 817 | 6 164 | 14 474 | 25 374 | 16 916 | 13 974 |
| *Mining support service activities* | 631 | 466 | 641 | 1 793 | 2 323 | 1 442 |
| **Manufacturing** | **196 039** | **225 887** | **317 970** | **521 853** | **575 877** | **605 411** |
| *Food products, beverages and tobacco* | 9 016 | 9 490 | 13 700 | 26 284 | 32 001 | 31 646 |
| *Textiles, wearing apparel, leather and related products* | 11 238 | 12 994 | 22 210 | 39 152 | 51 685 | 65 097 |
| *Wood and paper products and printing* | 9 130 | 8 535 | 10 177 | 12 931 | 13 666 | 12 853 |
| *Chemicals and non-metallic mineral products* | 33 233 | 38 992 | 68 358 | 112 792 | 125 664 | 135 362 |
| *Basic metals and fabricated metal products* | 13 929 | 15 086 | 27 568 | 46 727 | 51 304 | 54 988 |
| *Computer, electronic and electrical equipment* | 58 071 | 65 480 | 71 961 | 106 341 | 114 431 | 131 751 |
| *Machinery and equipment n.e.c* | 23 247 | 25 815 | 32 884 | 55 065 | 59 997 | 59 419 |
| *Transport equipment* | 32 362 | 42 451 | 60 755 | 100 554 | 103 093 | 89 414 |
| *Manufacturing nec; repair and installation of machinery and equipment* | 5 814 | 7 045 | 10 357 | 22 007 | 24 036 | 24 882 |
| **Electricity, gas, water supply, sewerage, waste and remediation activities** | **728** | **847** | **1 190** | **1 900** | **1 624** | **1 720** |
| **Construction** | **70** | **136** | **337** | **969** | **855** | **725** |
| **Business Services** | **191 713** | **239 531** | **385 088** | **634 497** | **749 367** | **823 532** |
| *Distributive trade, transport, accommodation and food services* | 117 285 | 142 271 | 214 196 | 340 386 | 361 874 | 350 706 |
| *Information and communication* | 15 427 | 17 464 | 30 337 | 51 197 | 73 186 | 91 917 |
| *Financial and insurance activities* | 23 575 | 34 548 | 61 380 | 93 780 | 137 462 | 175 007 |
| *Real estate activities* | 4 671 | 5 511 | 7 243 | 11 473 | 11 837 | 7 808 |
| *Other business services* | 30 757 | 39 737 | 71 932 | 137 662 | 165 009 | 198 094 |
| **Total services** | **202 734** | **255 430** | **405 493** | **664 431** | **777 291** | **845 473** |

Source: OECD-TiVA (2023)

**Figure 5. Composition of direct domestic value-added content of gross exports in APEC, 1995-2020**




Source: OECD-TiVA (2023)

### 2.2.2. Indirect domestic value added content of gross exports (EXGR IDC)

According to the OECD (2023), indirect domestic value added (IDC) content of exports corresponds to the value-added originating from other, upstream, domestic industries (different from industry i) in-country c that are incorporated in the exports of (domestic) industry i. It encompasses the value added sent to third economies and contain the information of the *forward participation* indicator in the Global Value Chain.

The IDC component reflects the integration of the APEC region with the GVC. Over this 25-year period, an average participation of 44.5% in gross exports is observed. Additionally, IDC represents 47.5% of the Domestic Value Added in exports in the APEC region.

In 1995, APEC had a total of USD 366 billion in IDC content in exports (goods and services). By 2005, IDC in exports grew at an average annual rate of 7.3%, reaching

USD 691 billion. Between 2005 and 2015, IDC in gross exports grew by 9.0% (USD 1 496 billion in 2015). Finally, between 2010 and 2020, IDC in gross exports grew at an average annual rate of 2.4%, reaching USD 1,543 billion.

Over these 25 years, the *Manufacturing* sector has maintained its share, moving from 67.1% in 1995 to 67.3% in 2020. Similarly, *Services* exports have maintained their share, from 28.5% in 1995 to 28.2% in 2020. Additionally, there has been an increase in the *Mining* sector's share; although its average participation is 2.1%, it grew by 41% between 1995 and 2000. Finally, the *Agriculture, hunting, forestry, and fishing* sector maintains the lowest average share among the four sectors mentioned, with an average of 1.5%, and a reduction of 5% over the analyzed period.

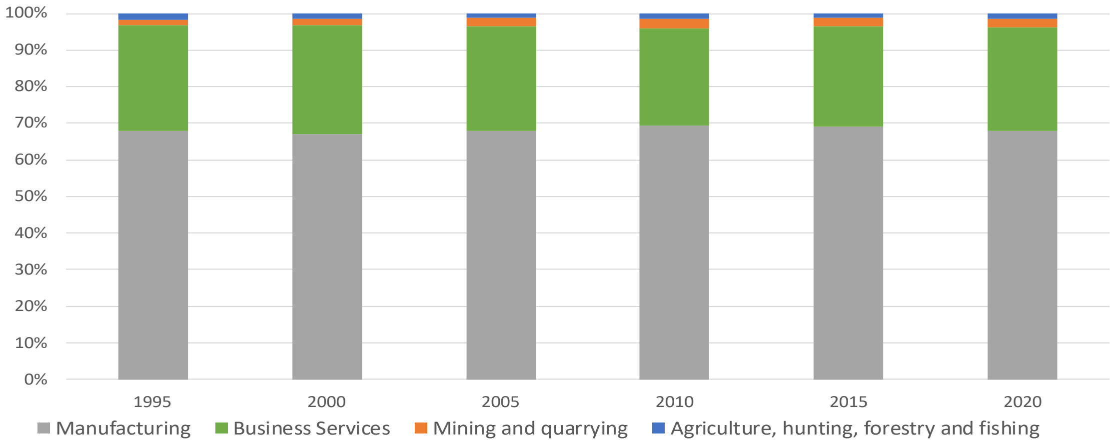
It is highlighted that in IDC content of gross exports, the Manufacturing sector is more relevant than Services. Thus, Manufacturing is considered the most intensively used input in GVCs.

**Table 4. Indirect domestic value added content of gross exports in APEC (USD millions)**

| EXGR_IDC: Indirect domestic value added content of gross exports | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|---|
| Total | 366 408 | 440 528 | 690 959 | 1 246 421 | 1 496 836 | 1 543 367 |
| **Agriculture, hunting, forestry and fishing** | **5 844** | **6 325** | **8 159** | **17 960** | **19 258** | **23 387** |
| *Agriculture, hunting, forestry* | 5 713 | 6 139 | 7 646 | 17 481 | 18 497 | 22 868 |
| *Fishing and aquaculture* | 131 | 185 | 514 | 479 | 762 | 519 |
| **Mining and quarrying** | **5 852** | **7 616** | **15 760** | **30 875** | **31 103** | **34 725** |
| *Mining and quarrying, energy producing products* | 2 152 | 3 789 | 9 468 | 19 979 | 20 047 | 27 681 |
| *Mining and quarrying, non-energy producing products* | 3 026 | 3 400 | 5 205 | 8 689 | 8 179 | 5 151 |
| *Mining support service activities* | 674 | 427 | 1 087 | 2 206 | 2 877 | 1 894 |
| **Manufacturing** | **245 778** | **290 818** | **461 997** | **855 468** | **1 024 002** | **1 039 412** |
| *Food products, beverages and tobacco* | *17 397* | *18 017* | *26 440* | *54 479* | *65 186* | *61 154* |
| *Textiles, wearing apparel, leather and related products* | *17 872* | *22 479* | *38 692* | *57 568* | *83 595* | *83 993* |
| *Wood and paper products and printing* | *10 187* | *10 545* | *13 279* | *17 739* | *20 148* | *19 516* |
| *Chemicals and non-metallic mineral products* | *41 867* | *50 736* | *93 136* | *170 140* | *205 131* | *204 434* |
| *Basic metals and fabricated metal products* | *18 117* | *20 057* | *38 438* | *80 708* | *93 935* | *95 208* |
| *Computer, electronic and electrical equipment* | *68 759* | *84 343* | *117 197* | *207 481* | *247 744* | *296 564* |
| *Machinery and equipment n.e.c* | *26 105* | *30 323* | *43 564* | *79 946* | *98 032* | *96 627* |
| *Transport equipment* | *38 564* | *45 960* | *77 062* | *152 600* | *158 313* | *126 699* |
| *Manufacturing nec; repair and installation of machinery and equipment* | *6 911* | *8 357* | *14 189* | *34 807* | *51 918* | *55 217* |
| **Electricity, gas, water supply, sewerage, waste and remediation activities** | **439** | **636** | **997** | **1 502** | **1 286** | **1 299** |
| **Construction** | **58** | **122** | **318** | **890** | **811** | **734** |
| **Business Services** | **104 513** | **128 921** | **195 155** | **326 688** | **407 712** | **434 833** |
| *Distributive trade, transport, accommodation and food services* | *73 410* | *82 439* | *123 148* | *198 829* | *239 310* | *234 729* |
| *Information and communication* | *8 147* | *13 391* | *17 209* | *28 885* | *42 014* | *52 237* |
| *Financial and insurance activities* | *7 917* | *13 259* | *18 889* | *34 145* | *48 203* | *52 458* |
| *Real estate activities* | *1 286* | *1 533* | *2 271* | *2 813* | *3 461* | *2 052* |
| *Other business services* | *13 753* | *18 300* | *33 639* | *62 017* | *74 723* | *93 357* |
| **Total services** | **108 437** | **135 012** | **203 728** | **339 726** | **420 376** | **443 810** |

Source: OECD-TiVA (2023)

**Figure 6. Composition of indirect domestic value added content of gross exports in APEC, 1995-2020**




Source: OECD-TiVA (2023)

### 2.3. Re-imported domestic value added content of gross exports (EXGR RIM)

Re-imported value added (RIM) content of gross exports represents the value added generated in any part of the domestic economy, which has been exported for the production of intermediate goods and services abroad and subsequently incorporated into imports used in the production of exports by some industry in the domestic economy.

The RIM component explains a very small part of the level of gross exports. Over this 25-year period, an average participation of 0.4% is observed. In 1995, APEC had a total of USD 1.9 billion in RIM content in exports (goods and services). By 2005, RIM in exports grew at an average annual rate of 14.7%, reaching USD 3.4 billion. Between 2005 and 2015, RIM in gross exports grew by 9.3% (USD 14 billion in 2015). Finally, between 2010 and 2020, RIM in gross exports grew at an average annual rate of 2.5%, reaching USD 16.0 billion.

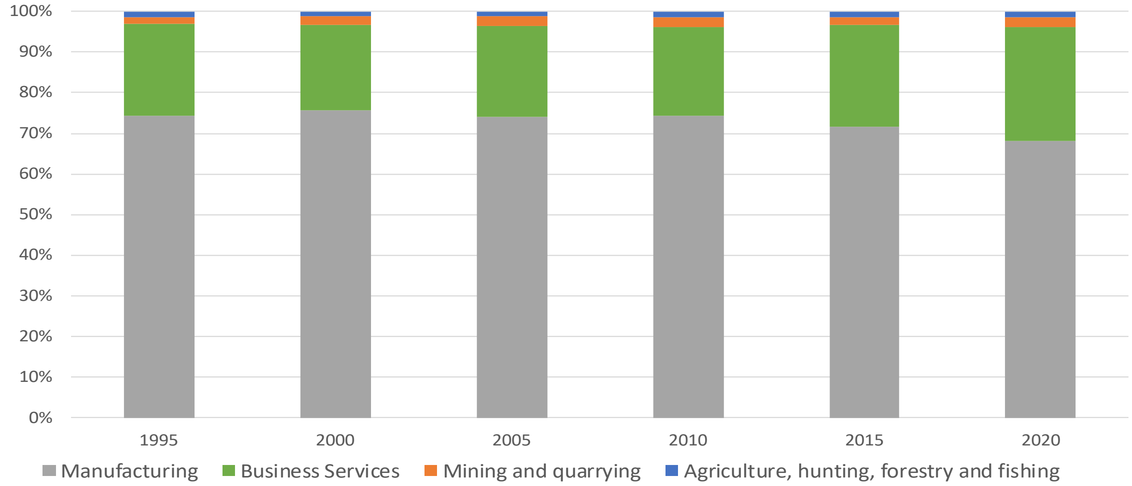
Over these 25 years, the *Services* sector has increased its share, rising from 22.6% in 1995 to 27.9% in 2020. Conversely, *Manufacturing* exports have decreased by 5 percentage points, from 73.7% in 1995 to 67.9% in 2020. Additionally, there has been an increase in the *Mining* sector's share; although its average participation is 2.3%, it grew by 37% between 1995 and 2000. Finally, the *Agriculture, hunting, forestry, and fishing* sector maintains the lowest average share among the four sectors mentioned, at 1.3% on average, with an increase of 12.8% over the analyzed period.

**Table 5. Re-imported domestic value added content of gross exports in APEC (USD millions)**

| EXGR_RIM: Re-imported domestic value added content of gross exports | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|---|
| Total | 1 929 | 3 368 | 6 635 | 12 826 | 14 814 | 15 980 |
| **Agriculture, hunting, forestry and fishing** | **26** | **41** | **73** | **165** | **194** | **239** |
| *Agriculture, hunting, forestry* | **25** | **39** | **68** | **159** | **186** | **233** |
| *Fishing and aquaculture* | **1** | **2** | **6** | **6** | **9** | **7** |
| **Mining and quarrying** | **32** | **65** | **163** | **330** | **301** | **367** |
| *Mining and quarrying, energy producing products* | **11** | **32** | **100** | **214** | **202** | **297** |
| *Mining and quarrying, non-energy producing products* | **18** | **29** | **52** | **94** | **75** | **49** |
| *Mining support service activities* | **3** | **4** | **11** | **22** | **24** | **21** |
| **Manufacturing** | **1 421** | **2 524** | **4 870** | **9 444** | **10 545** | **10 848** |
| *Food products, beverages and tobacco* | *65* | *88* | *165* | *339* | *437* | *430* |
| *Textiles, wearing apparel, leather and related products* | *91* | *135* | *283* | *371* | *502* | *560* |
| *Wood and paper products and printing* | *50* | *79* | *119* | *159* | *166* | *159* |
| *Chemicals and non-metallic mineral products* | *229* | *431* | *1 103* | *2 321* | *2 535* | *2 673* |
| *Basic metals and fabricated metal products* | *152* | *250* | *560* | *1 170* | *1 162* | *1 193* |
| *Computer, electronic and electrical equipment* | *401* | *730* | *1 229* | *2 164* | *2 178* | *2 774* |
| *Machinery and equipment n.e.c* | *138* | *236* | *430* | *843* | *967* | *973* |
| *Transport equipment* | *258* | *520* | *859* | *1 772* | *2 185* | *1 633* |
| *Manufacturing nec; repair and installation of machinery and equipment* | *37* | *55* | *124* | *305* | *415* | *453* |
| **Electricity, gas, water supply, sewerage, waste and remediation activities** | **2** | **5** | **9** | **13** | **12** | **13** |
| **Construction** | **0** | **1** | **3** | **12** | **11** | **9** |
| **Business Services** | **436** | **709** | **1 471** | **2 783** | **3 676** | **4 451** |
| *Distributive trade, transport, accommodation and food services* | *343* | *529* | *1 077* | *1 918* | *2 465* | *2 848* |
| *Information and communication* | *26* | *52* | *87* | *201* | *297* | *472* |
| *Financial and insurance activities* | *26* | *56* | *121* | *280* | *411* | *519* |
| *Real estate activities* | *3* | *4* | *8* | *14* | *17* | *10* |
| *Other business services* | *37* | *68* | *178* | *371* | *486* | *602* |
| **Total services** | **447** | **733** | **1 516** | **2 863** | **3 752** | **4 504** |

Source: OECD-TiVA (2023)

**Figure 7. Composition of Re-imported value added content of gross exports in APEC, 1995-2020**




Source: OECD-TiVA (2023)

### 2.4. Foreign value added content of gross exports (EXGR FVA)

According to the OECD (2023), foreign value added (FVA) content of gross exports captures the value of imported intermediate goods and services that are embodied in a domestic industry's exports. It is the value added created by foreign economies in the form of intermediate goods and services.

The FVA component explains a small portion of the level of gross exports. Over this 25-year period, an average share of 6.4% is observed.

In 1995, APEC had a total of USD 37.5 billion in FVA contained in exports (goods and services). By 2005, the FVA contained in exports grew at an average annual rate of 13.0%, reaching USD 113 billion. Between 2005 and 2015, the FVA contained in gross exports grew by 6.4% (USD 197 billion in 2015). Finally, between 2010 and 2020, the FVA contained in gross exports declined at an average annual rate of -0.6%, reaching a value of USD 197 billion.

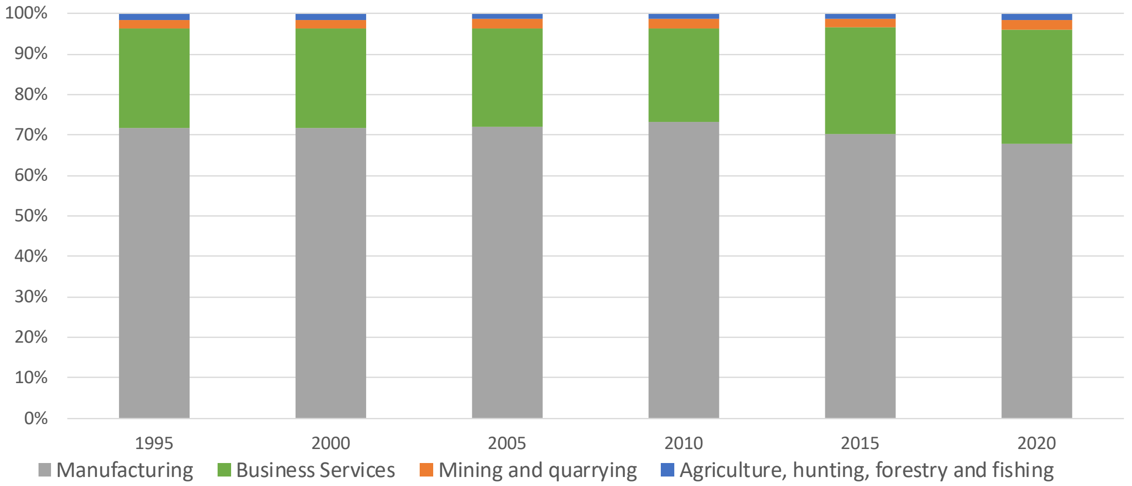
Over these 25 years, the *Services* sector has increased its share, rising from 24.5% in 1995 to 28.2% in 2020. On the other hand, *Manufacturing* exports have declined by 4 percentage points, dropping from 71.2% in 1995 to 67.5% in 2020. Additionally, there has been an increase in the share of the *Mining* sector, which, although it has an average share of 2.1%, grew by 18.6% between 1995 and 2000. Finally, the *Agriculture, Hunting, Forestry, and Fishing* sector maintains the lowest average share of the four sectors mentioned, with an average of 1.4%, and a reduction of -0.4% over the analyzed period.

**Table 6. Foreign value added content of gross exports in APEC (USD millions)**

| EXGR_FVA: Foreign value added content of gross exports | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|---|
| Total | 37 491 | 52 795 | 112 742 | 207 520 | 197 453 | 197 037 |
| **Agriculture, hunting, forestry and fishing** | **595** | **746** | **1 299** | **2 614** | **2 657** | **3 117** |
| *Agriculture, hunting, forestry* | **580** | **713** | **1 189** | **2 515** | **2 538** | **3 037** |
| *Fishing and aquaculture* | **16** | **33** | **110** | **99** | **119** | **80** |
| **Mining and quarrying** | **710** | **1 109** | **2 722** | **4 777** | **3 817** | **4 426** |
| *Mining and quarrying, energy producing products* | **267** | **559** | **1 688** | **3 026** | **2 536** | **3 615** |
| *Mining and quarrying, non-energy producing products* | **388** | **499** | **879** | **1 471** | **989** | **594** |
| *Mining support service activities* | **55** | **51** | **155** | **280** | **292** | **217** |
| **Manufacturing** | **26 694** | **37 562** | **80 442** | **150 753** | **137 861** | **132 999** |
| *Food products, beverages and tobacco* | *1 507* | *1 666* | *3 220* | *6 045* | *6 756* | *6 298* |
| *Textiles, wearing apparel, leather and related products* | *1 989* | *2 464* | *4 976* | *6 394* | *6 981* | *7 374* |
| *Wood and paper products and printing* | *1 058* | *1 337* | *2 032* | *2 457* | *2 201* | *2 024* |
| *Chemicals and non-metallic mineral products* | *5 660* | *8 764* | *24 950* | *51 421* | *41 274* | *39 170* |
| *Basic metals and fabricated metal products* | *2 533* | *3 251* | *7 379* | *15 854* | *13 981* | *13 602* |
| *Computer, electronic and electrical equipment* | *6 485* | *9 506* | *17 169* | *29 039* | *26 377* | *30 722* |
| *Machinery and equipment n.e.c* | *2 489* | *3 455* | *6 601* | *11 913* | *11 979* | *11 433* |
| *Transport equipment* | *4 253* | *6 236* | *12 156* | *23 264* | *23 120* | *16 826* |
| *Manufacturing nec; repair and installation of machinery and equipment* | *721* | *884* | *1 959* | *4 367* | *5 191* | *5 550* |
| **Electricity, gas, water supply, sewerage, waste and remediation activities** | **42** | **99** | **210** | **212** | **172** | **171** |
| **Construction** | **6** | **16** | **51** | **153** | **125** | **95** |
| **Business Services** | **9 190** | **12 818** | **27 185** | **47 681** | **51 767** | **55 563** |
| *Distributive trade, transport, accommodation and food services* | *7 173* | *9 491* | *19 883* | *32 843* | *33 645* | *33 742* |
| *Information and communication* | *522* | *884* | *1 513* | *3 098* | *4 114* | *6 385* |
| *Financial and insurance activities* | *623* | *1 144* | *2 482* | *5 361* | *6 628* | *7 406* |
| *Real estate activities* | *73* | *84* | *168* | *248* | *248* | *138* |
| *Other business services* | *799* | *1 215* | *3 139* | *6 131* | *7 133* | *7 893* |
| **Total services** | **9 444** | **13 263** | **28 019** | **49 009** | **52 821** | **56 229** |

Source: OECD-TiVA (2023)

**Figure 8. Composition of foreign value added content of gross exports in APEC, 1995-2020**




Source: OECD-TiVA (2023)

## 2.5. Participation in Global Value Chains

### 2.5.1. Forward participation (FEXDVAPSH)

According to the OECD (2023), *forward participation* in the global value chain corresponds to the domestic VA embodied in foreign exports, and commonly presented as a share (%) of total gross exports of the value-added source country *[sic]*. It is considered as the contribution of intermediate goods and services that will be used by the destination economy in the production of goods and services for export.

In 1995, APEC had a forward participation rate[6] of 16.6% in global value chains. By 2005, its participation rate had increased to 22.0%. Between 2005 and 2015, there was a decrease in forward participation rate, which fell at an average annual rate of -0.5%. Finally, between 2010 and 2020, forward participation rate in GVCs grew at an average annual rate of 1.5%, reaching a participation rate of 23.6% with respect to its total gross export.

Over these 25 years, APEC's forward participation rate in global value chains has increased throughout the analyzed period, with an average annual growth rate of 1.5%.

**Table 7. Forward participation (%)**

| Participación hacia adelante (Forward Participation) | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|---|
| APEC: Asia-Pacific Economic Cooperation | 16,6 | 20,1 | 22,0 | 20,7 | 21,1 | 23,6 |

Source: OECD-TiVA (2023)

### 2.5.2. Backward Participation (DEXFVAPSH)

According to the OECD (2023), *backward participation* in the global value chain corresponds to the foreign VA embodied in exports, and commonly presented as % of total gross exports of the exporting country *[sic]*. It is considered as the contribution of foreign intermediate goods and services that will be used by the domestic economy in the production of goods and services for export.

In 1995, APEC had a backward participation rate[7] of 4.5% in global value chains. By 2005, its participation rate had increased to 7.0%. Between 2005 and 2015, there was a decrease in backward participation rate, which fell at an average annual rate of -1.3%. Finally, between 2010 and 2020, backward participation in GVCs declined at an average annual rate of -2.6%, reaching a participation rate of 5.9% with respect to its total gross exports.

Over these 25 years, APEC's backward participation in global value chains has steadily increased throughout the analyzed period, with an average annual growth rate of 1.1%.

**Table 8. Backward Participation (%)**

| Participación hacia atras (Backward Participation) | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|---|
| APEC: Asia-Pacific Economic Cooperation | 4,5 | 5,2 | 7,0 | 7,5 | 6,2 | 5,9 |

Source: OECD-TiVA (2023)

[6] This is calculated for the total value of source and exporting industries; it is estimated as being the VA contents of exports originated in the source country *[sic]*, and embodied in the exports of the exporting country *[sic]*, divided by the gross exports of the source country *[sic]*. This rate is taken directly from OECD TiVA Database.
[7] This is calculated for the total value of source and exporting industries; it is estimated as the ratio between the VA contents of imports from the source country *[sic]* p and the gross exports of the exporting country *[sic]* c. This rate is taken directly from OECD E TiVA Database.

## 3. Decomposition of Backward and Forward Participation

This section analyzes the participation of APEC members in trade by examining trends and patterns during the period from 2010 to 2020, with the aim of identifying key partners and sectors. To achieve this, we have disaggregated forward and backward participation, an exercise that provides us with insights into APEC's position in the global value chain, its main partners, and the industries with the highest participation.

### 3.1. Economies

One of APEC's roles in global value chains (GVCs) is characterized by ensuring the sustainability of the production process through the provision of goods and services used as intermediates in destination regions. Another role of APEC in global value chains (GVCs) is characterized by sourcing inputs in goods and services from around the world to be used in the production of its exports.

#### 3.1.1. Main economies with which APEC participates forward in the GVC[8]

In 2010, the majority of APEC's forward participation was concentrated in Europe, accounting for 74.6% of total exports used as intermediate inputs. Asia followed with 9.8%, South America with 2.8%, and Africa with 2.2%. Central America had a minimal participation of 0.2%[9].

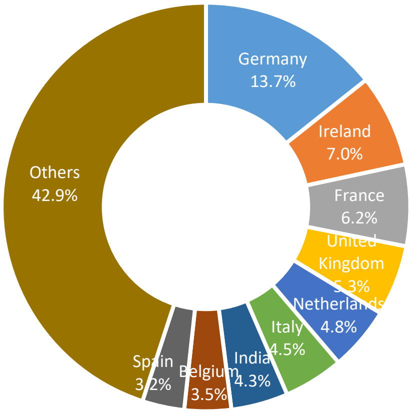
That same year, the economies with highest concentration of APEC's exports used as inputs in their exports were Germany (13.7%), followed by Ireland (7.0%), France (6.2%), the United Kingdom (5.3%), the Netherlands (4.8%), Italy (4.5%), India (4.3%), Belgium (3.5%), and Spain (3.2%).

The observed trend shows a high level of input shipments to Europe; however, when we look for individual economies, there is a wide diversification in destinations, considering that the average participation is 1.8%[10] (average from figure 10).

**Figure 9. Forward participation of APEC by continent (2010), %**


Source: OECD-TiVA (2023)

**Figure 10. Forward participation of APEC by economy (2010), %**




Source: OECD-TiVA (2023)

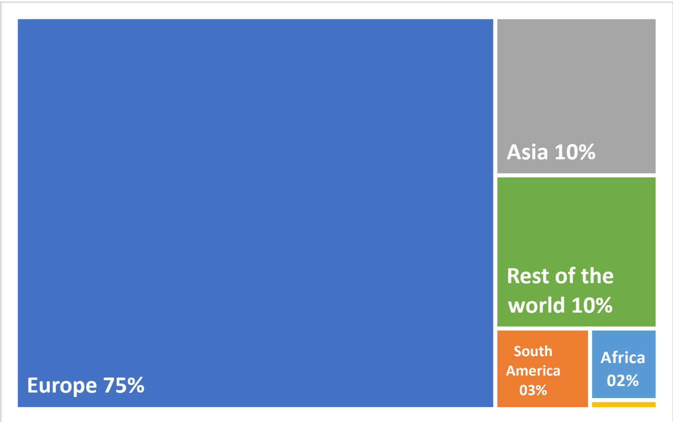
[8] For this section, the analysis focuses on the value added from APEC in the total exports of the non-APEC world.
[9] North America is not included in the calculation since Canada; Mexico; and the United States are part of APEC.
[10] In the OECD-TiVA database, up to 57 individual destinations are identified.

In 2015, we observed that the majority of APEC's forward participation was concentrated in Europe, accounting for 74.7% of total exports used as intermediate inputs. Asia followed with 10.2%, South America with 3.0%, and Africa with 1.9%. Central America had a minimal participation of 0.2%.

That same year, the economies with the highest concentration of APEC's exports used as inputs in their exports were Germany (13.3%), followed by Ireland (8.8%), France (6.2%), the Netherlands (5.9%), the United Kingdom (5.0%), India (4.7%), Italy (4.1%), Belgium (3.1%), and Spain (2.9%)

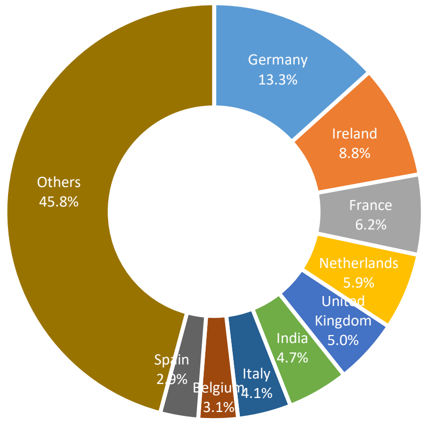
We observe that the high level of shipments of inputs to Europe continues. However, the participation of Asia and South America has increased. Furthermore, when we look for individual economies, there is a wide diversification in destinations, with an average participation of 1.8%[11] (figure 12).

**Figure 11. Forward participation of APEC by continent (2015), %**




Source: OECD-TiVA (2023)

**Figure 12. Forward participation of APEC by economy (2015), %**




Source: OECD-TiVA (2023)

In 2020, we observed that the majority of APEC's forward participation was concentrated in Europe, accounting for 77.3% of the total exported for intermediate use. Asia followed with 10.0%, South America with 2.9%, and Africa with 1.8%. Central America had only a small share of 0.2%.

That same year, the economies that concentrated APEC's exports for use as inputs in their own exports were Ireland at 13.3%, followed by Germany (11.8%), the Netherlands (6.2%), France (4.9%), the United Kingdom (4.6%), India (4.6%), Italy (3.7%), Poland (3.4%), and Luxembourg (3.1%).

We observe that the high level of input shipments to Europe has grown, while the participation of Asia and South America has decreased. Likewise, when we look for individual economies, there is wide diversification in destinations, considering that the average participation is 1.6%[12] (figure 14).

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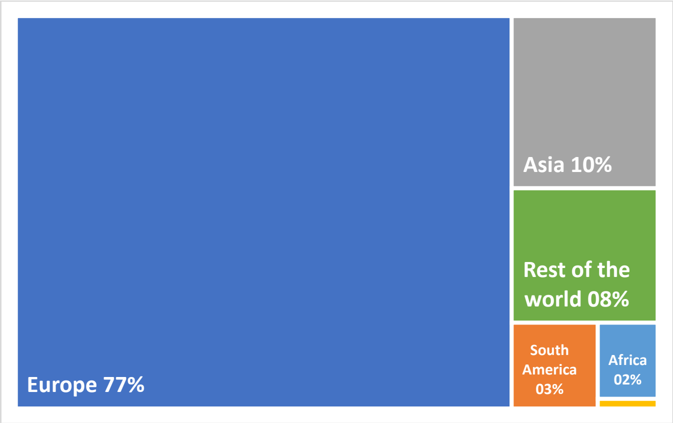
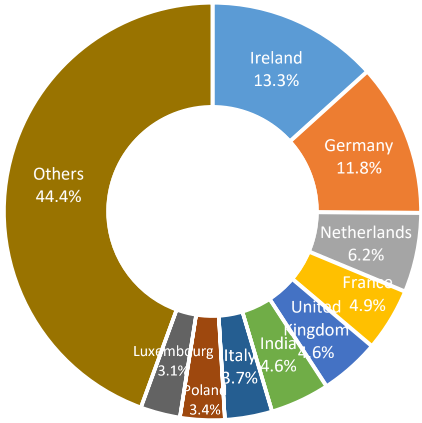
[11] In the OECD-TiVA database, up to 57 individual destinations are identified.
[12] In the OECD-TiVA database, up to 57 individual destinations are identified.

**Figure 13. Forward participation of APEC by continent (2020), %**




Source: OECD-TiVA (2023)

**Figure 14. Forward participation of APEC by economy (2020), %**




Source: OECD-TiVA (2023)

### 3.1.2. Main economies with which APEC participates backward in GVC[13]

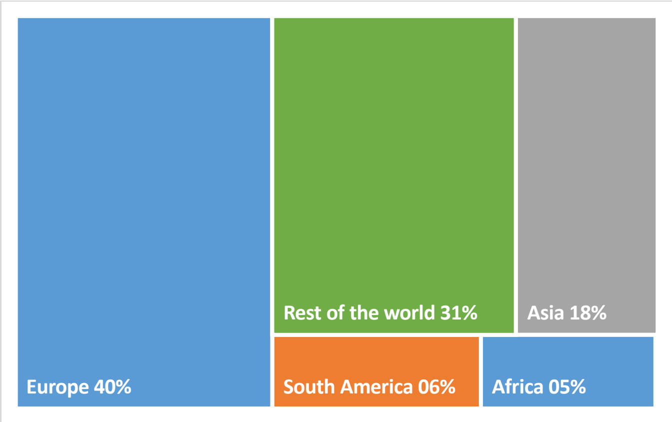
In 2010, we observed that the majority of APEC's backward participation was concentrated in Europe, accounting for 40.0% of the total foreign value added exported by APEC. Asia followed with 18.0%, South America with 6.1%, and Africa with 5.1%. Central America only had a small share of 0.1%[14].

That same year, the economies from which APEC obtained value added for its exports were Saudi Arabia with 10.1%, followed by Germany (9.7%), the United Kingdom (5.6%), India (4.5%), Brazil (4.2%), France (4.1%), Italy (2.8%), and South Africa (2.6%).

The observed trend shows a higher origin of foreign value added from Europe; however, when we look for individual economies, there is a wide diversification in the foreign sources of value added, considering that the average participation is 1.8%[15] (average from figure 16).

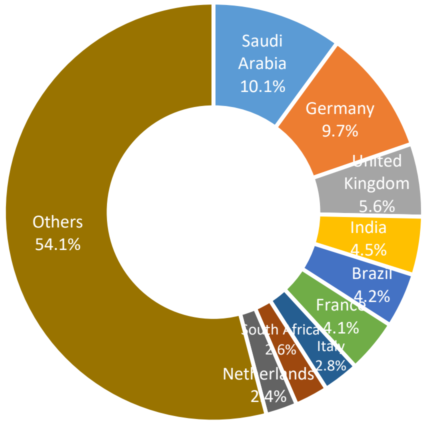
[13] For this section, the value added from the Non-APEC World in the total exports of APEC is analyzed.
[14] North America is not included in the calculation since Canada; Mexico; and the United States are part of APEC.
[15] In the OECD-TiVA database, up to 57 individual destinations are identified.

**Figure 15. Backward participation of APEC by continent (2010), %**




Source: OECD-TiVA (2023)

**Figure 16. Backward participation of APEC by economy (2010), %**



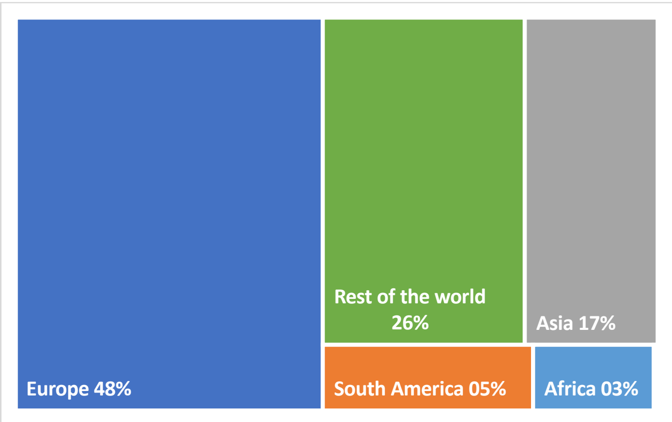

Source: OECD-TiVA (2023)

In 2015, we observed that the majority of APEC's backward participation was concentrated in Europe, accounting for 47.9% of the total foreign value added exported by APEC. Asia followed with 17.2%, South America with 5.5%, and Africa with 3.1%. Central America only had a small share of 0.1%[16].

That same year, the economies from which APEC obtained value added for its exports were Germany with 11.3%, followed by Saudi Arabia (7.1%), the United Kingdom (6.7%), India (5.8%), France (5.0%), Brazil (3.8%), Italy (3.3%), and Netherlands (3.0%).

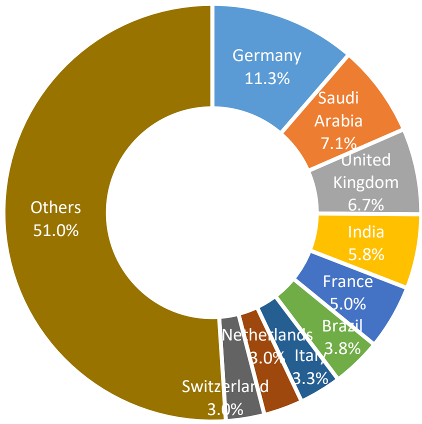
The observed trend shows a higher origin of foreign value added from Europe; however, when we look for individual economies, there is a wide diversification in the foreign sources of value added, considering that the average participation is 1.8%[17] (average from figure 18).

**Figure 17. Backward participation of APEC by continent (2015), %**




Source: OECD-TiVA (2023)

**Figure 18. Backward participation of APEC by economy (2015), %**




Source: OECD-TiVA (2023)

In 2020, we observed that the majority of APEC's backward participation was concentrated in Europe, where 48.8% of the total foreign value added exported by APEC

[16] North America is not included in the calculation since Canada; Mexico; and the United States are part of APEC.

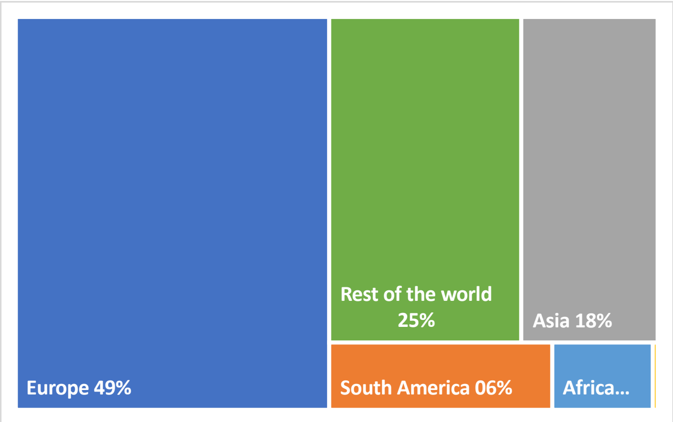
[17] In the OECD-TiVA database, up to 57 individual destinations are identified.

originated. Asia followed with 17.6%, South America with 6.0%, and Africa with 2.7%. Central America only had a small share of 0.1%[18].

That same year, the economies from which APEC obtained value added for its exports were Germany with 11.0%, followed by India (7.5%), the United Kingdom (6.3%), Saudi Arabia (5.3%), Brazil (4.6%), France (4.6%), Italy (3.4%), and Ireland (3.0%)

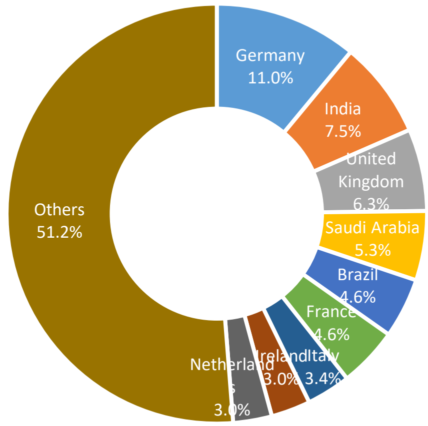
The observed trend shows a higher origin of foreign value added from Europe; however, when we look for individual economies, there is a wide diversification in the foreign sources of value added, considering that the average participation is 1.8%[19] (average from figure 20).

**Figure 19. Backward participation of APEC by continent (2020), %**




Source: OECD-TiVA (2023)

**Figure 20. Backward participation of APEC by economy (2020), %**




Source: OECD-TiVA (2023)

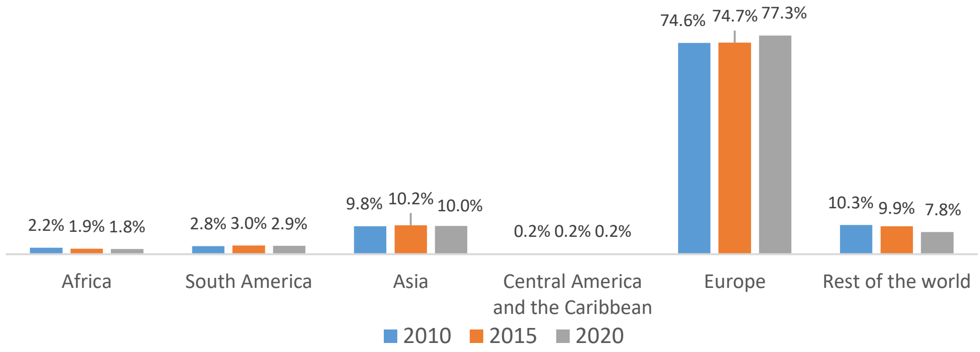
### 3.1.3. Trends in forward and backward participation by region

**Forward participation**

Between 2010 and 2020, we have observed a significant increase in APEC economies forward participation with Europe. However, between 2010 and 2015, there was a greater engagement with Asia, with an increase of 0.4 percentage points in participation, and with the Americas, with an increase of 0.2 percentage points. These increases observed in 2015 subsequently declined, while participation with Europe increased by 2.7 percentage points. Figure 21 also indicates that APEC's intermediate goods and services are largely destined for European economies, which incorporate these inputs from APEC economies into their final exports.

[18] North America is not included in the calculation since Canada, the United States, and Mexico are part of APEC.
[19] In the OECD-TiVA database, up to 57 individual destinations are identified.

**Figure 21. Breakdown of APEC's forward participation by continent (2010-2020), %**

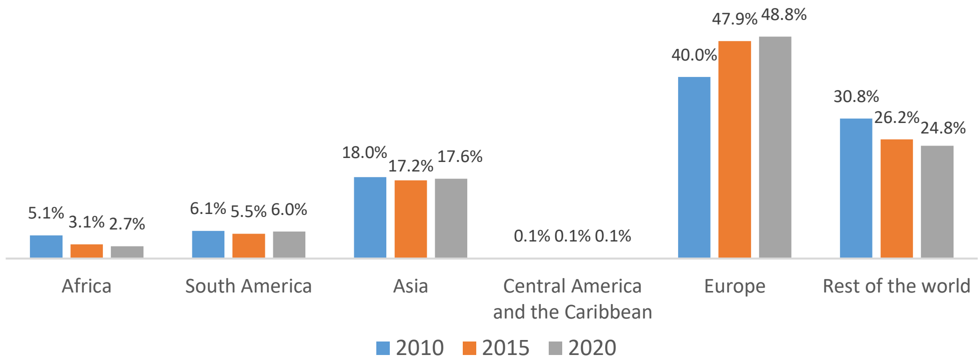



Source: OECD-TiVA (2023)

## Backward participation

Between 2010 and 2020, we have observed a significant increase in APEC economies backward participation with Europe. During the years 2010 and 2015, there was a closer engagement with Europe, accompanied by a decline in the participation of America and Asia as providers of intermediate goods and services in APEC's exports. Figure 22 shows a higher proportion of these inputs are sourced from European economies, while the participation from Asia and America has remained nearly constant throughout the analyzed period

**Figure 22. Breakdown of APEC's backward participation by continent (2010-2020), %**




Source: OECD-TiVA (2023)

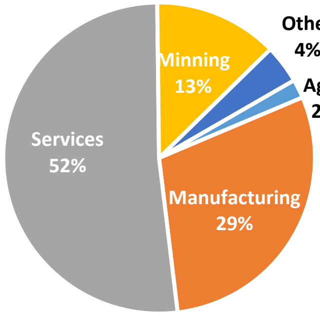
## 3.2. Sectors / Industries

One role of APEC in global value chains (GVCs) is to ensure the sustainability of the production process by providing intermediate goods and services across various sectors. Additionally, APEC is also distinguished by acquiring inputs of goods and services worldwide for use in the production of exports in different sectors

#### 3.2.1. Main Industries in which APEC has forward participation[20]

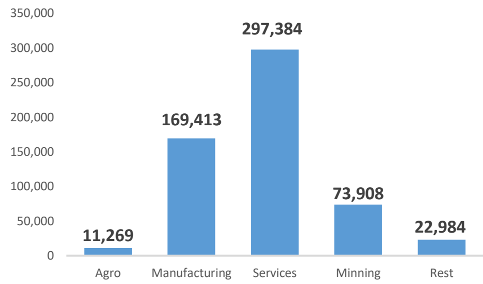
In 2010, we observed that the majority of APEC's forward participation was concentrated in the Services sector, accounting for 51.7% of the total exported for intermediate use. This sector was followed by Manufacturing with 29.5%, Mining with 12.9%, and Agriculture with 2.0%.

**Figure 23. Forward participation of APEC by sectors (2010), %**




Source: OECD-TiVA (2023)

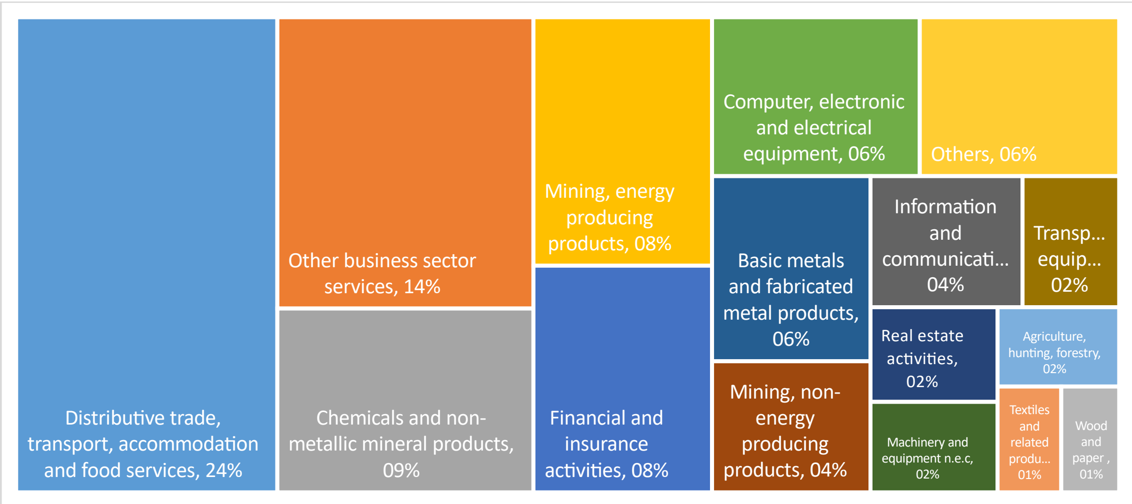
**Figure 24. Forward participation of APEC by sectors (2010), USD Mill.**




Source: OECD-TiVA (2023)

That same year, the industries that concentrated APEC's exports to be used as inputs in non-APEC world exports were distributive trade, transport accommodation and food with 23.7%, followed by other business services (14.2%), chemicals and non-metallic mineral products (9.0%), energy mining (8.5%), financial and insurance activities (7.7%), computer, electronic and electrical equipment(6.3%), basic metals and fabricated metal products (5.6%), non-energy mining (4.0%), information and telecommunications (3.8%), and transport equipment (2.4%).

**Figure 25. Forward participation of APEC by industries (2010), %**

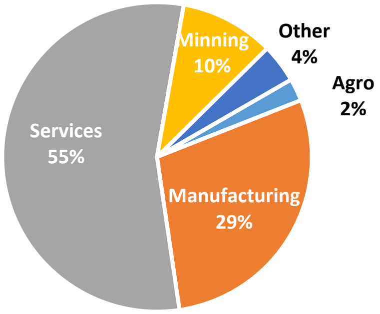



Source: OECD-TiVA (2023)

[20] For this section, the value added by sectors from APEC is analyzed in the total exports of the non-APEC World.

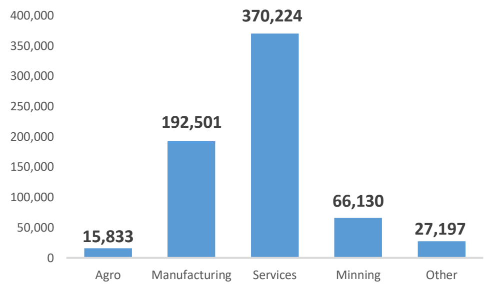
In 2015, we observed that the majority of APEC's forward participation was concentrated in the Services sector, accounting for 55.1% of the total exported for intermediate use. This was followed by Manufacturing with 28.7%, Mining with 9.8%, and Agriculture with 2.4%.

**Figure 26. Forward participation of APEC by sectors (2015), %**




Source: OECD-TiVA (2023)

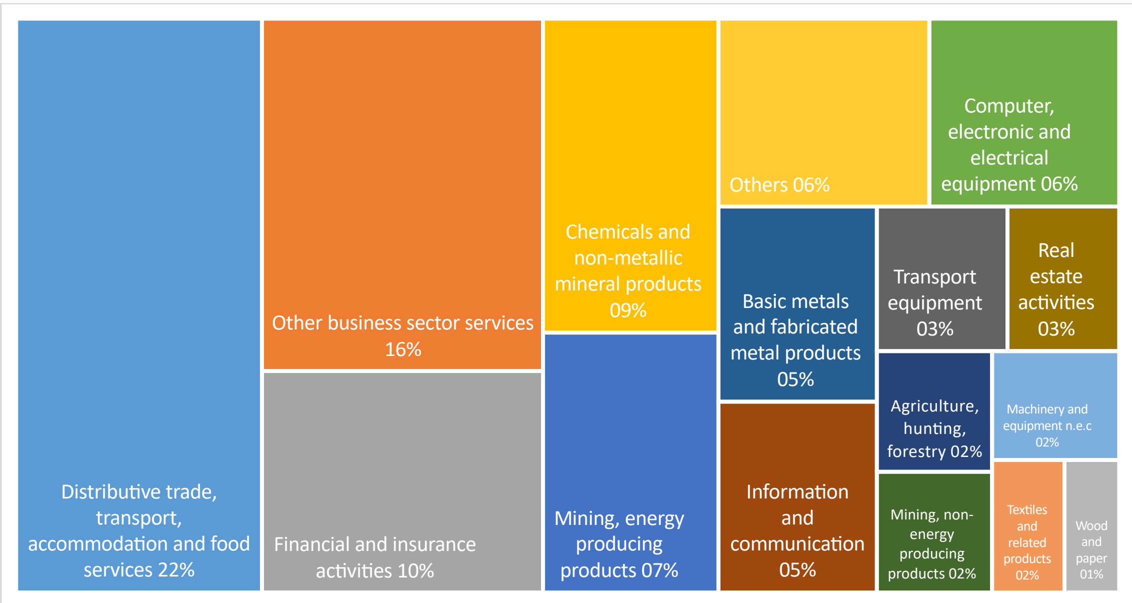
**Figure 27. Forward participation of APEC by sectors (2015), USD Mill.**




Source: OECD-TiVA (2023)

That same year, the industries that concentrated APEC's exports for use as inputs in the exports of the non-APEC world were distributive trade, transport accommodation and food with 22.3%, followed by other business services (15.7%), financial and insurance activities (9.8%), chemicals and non-metallic mineral products (8.7%), energy mining (7.2%), electronic and electrical equipment (5.6%), basic metals and fabricated metal products (4.9%), information and telecommunications (4.8%), and transport equipment (3.0%).

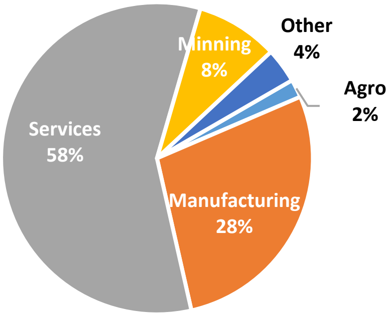
**Figure 28. Forward participation of APEC by industries (2015), %**




Source: OECD-TiVA (2023)

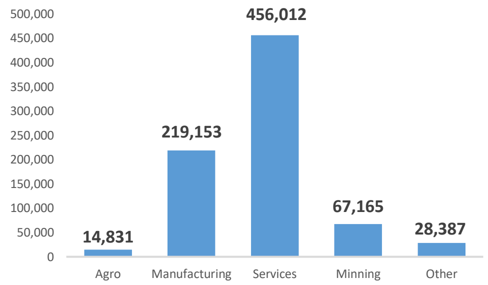
In 2020, we observed that the majority of APEC's forward participation was concentrated in the Services sector, accounting for 58.1% of the total exported for intermediate use. This was followed by Manufacturing with 27.9%, Mining with 8.6%, and Agriculture with 1.9%.

**Figure 29. Forward participation of APEC by sectors (2020), %**




Source: OECD-TiVA (2023)

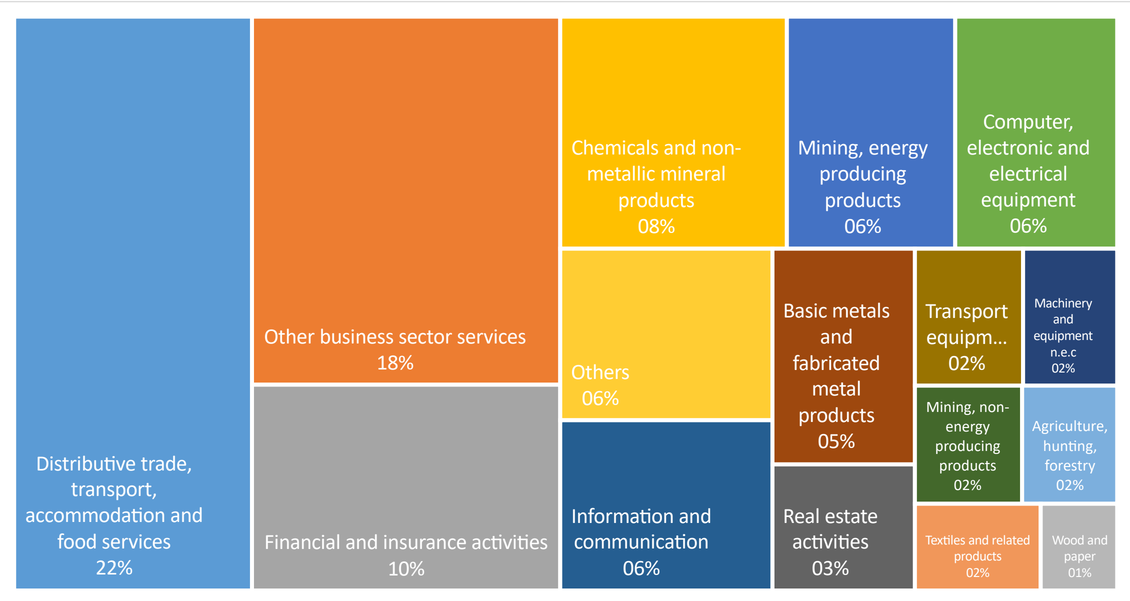
**Figure 30. Forward participation of APEC by sectors (2020), USD Mill.**




Source: OECD-TiVA (2023)

That same year, the subsectors that concentrated APEC's exports to be used as inputs in the exports of non-APEC economies were Distributive trade, transport accommodation and food with 21.6%, followed by other business services (17.9%), financial and insurance activities (10.0%), chemical and non-metallic mineral products (8.3%), energy mining (6.2%), electronic and electrical equipment (5.9%), information and telecommunications (5.7%), basic metals and fabricated metal products (4.8%), and real estate activities (2.8%).

**Figure 31. Forward participation of APEC by industries (2020), %**

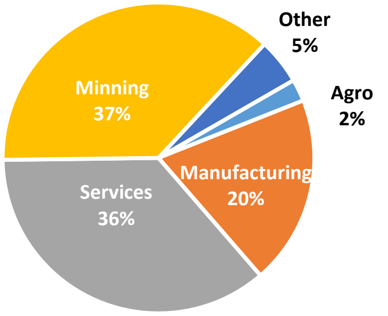



Source: OECD-TiVA (2023)

### 3.2.2. Main Industries in which APEC has backward participation[21]

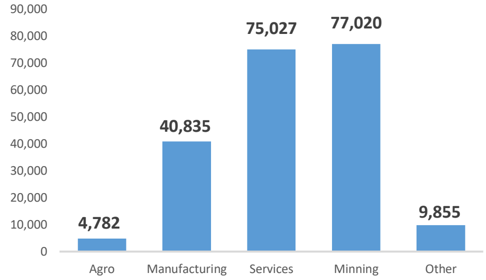
In 2010, we observed that the majority of APEC's backward participation was concentrated in the Mining sector, with 37.1% of the value added used as inputs for exports. This sector was followed by Services with 36.2%, Manufacturing with 19.7%, and Agriculture with 2.3%.

**Figure 32. Backward participation of APEC by sectors (2010), %**




Source: OECD-TiVA (2023)

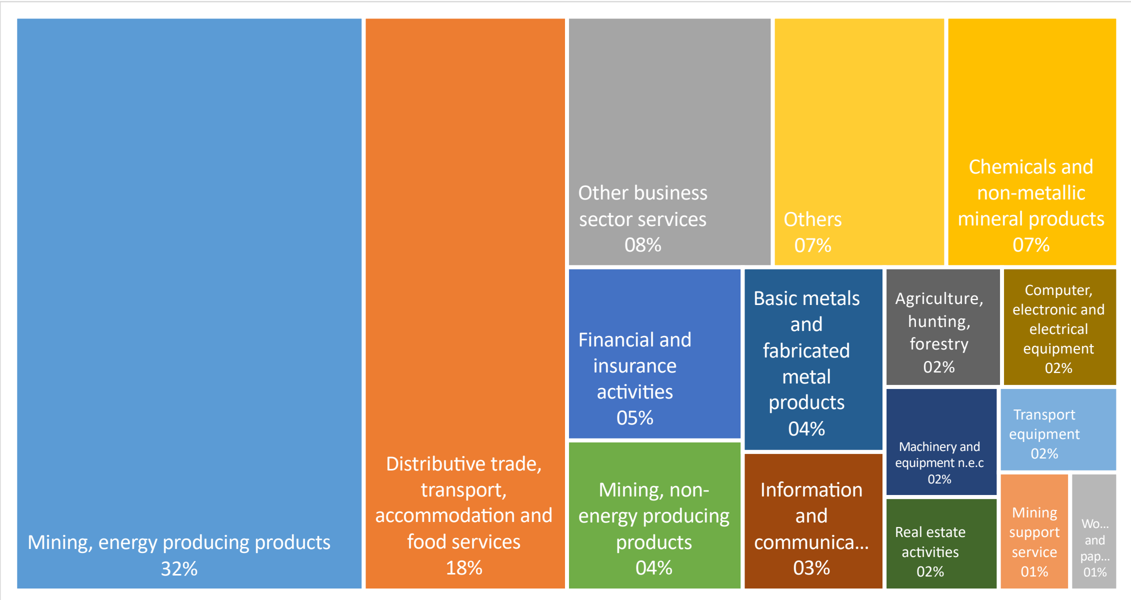
**Figure 33. Backward participation of APEC by sectors (2010), USD Mill.**




Source: OECD-TiVA (2023)

That same year, the non-APEC world industries that contributed the most value added to APEC's exports were Energy Mining with 31.6%, followed by distributive trade, transport accommodation and food (18.4%), other business sector services (8.2%), chemicals and non-metallic mineral products (6.8%), financial and insurance activities (4.8%), non-Energy mining (4.2%), basic metals and fabricated metal products (4.1%), information and telecommunications (3.1%), and agriculture, hunting, and forestry (2.2%).

**Figure 34. Backward participation of APEC by industries (2010), %**

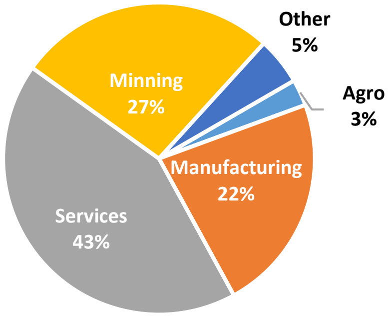



Source: OECD-TiVA (2023)

[21] For this section, the value added by sectors from APEC is analyzed in the total exports of the non-APEC World.

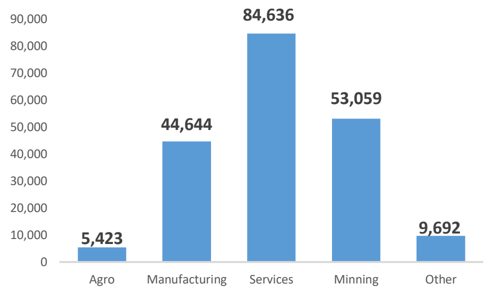
In 2015, we observed that the majority of APEC's backward participation was concentrated in the Services sector, accounting for 42.9% of the value added used as inputs for exports. This sector was followed by Mining with 26.9%, Manufacturing with 22.6%, and Agriculture with 2.7%.

**Figure 35. Backward participation of APEC by sectors (2015), %**




Source: OECD-TiVA (2023)

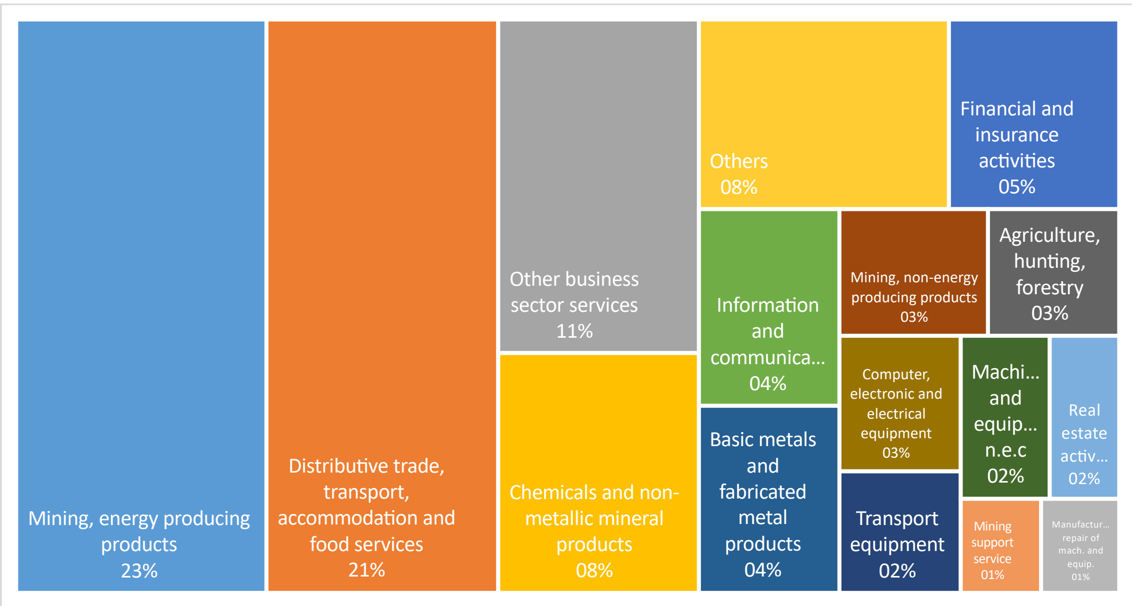
**Figure 36. Backward participation of APEC by sectors (2015), USD Mill.**




Source: OECD-TiVA (2023)

That same year, the non-APEC world industries that contributed the most value added to APEC's exports were Energy mining with 22.7%, followed by Distributive trade, transport accommodation and food (21.0%), other business services (10.6%), chemical and non-metallic mineral products (7.6%), financial and insurance activities (5.1%), information and telecommunications (4.4%), basic metals and fabricated metal products (4.2%), non-energy mining (3.0%), and agriculture, hunting, and forestry (2.6%).

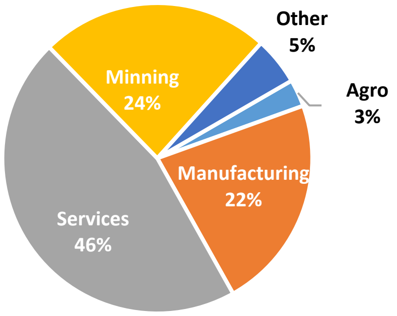
**Figure 37. Backward participation of APEC by industries (2015), %**




Source: OECD-TiVA (2023)

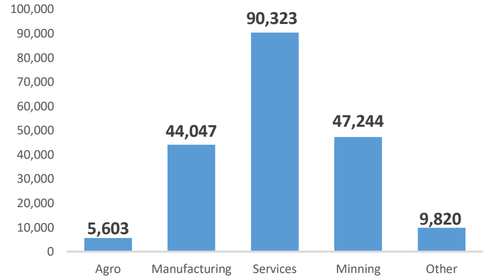
In 2020, we observed that the majority of APEC's backward participation was concentrated in the Services sector, accounting for 45.8% of the value added used as inputs for exports. This sector was followed by Mining with 24.0%, Manufacturing with 22.4%, and Agriculture with 2.8%.

**Figure 38. Backward participation of APEC by sectors (2020), %**




Source: OECD-TiVA (2023)

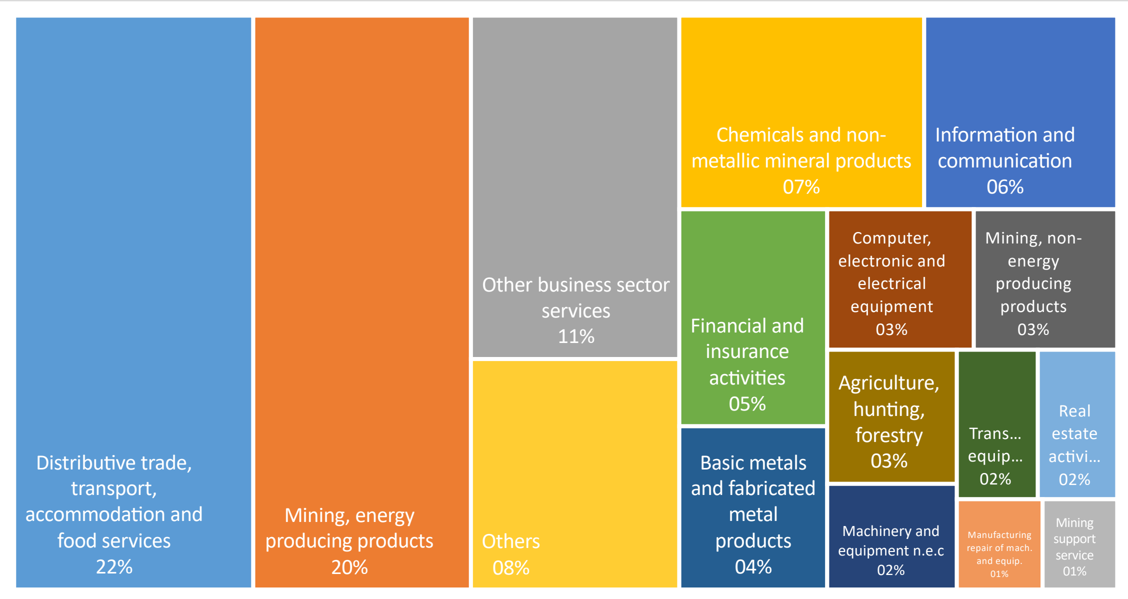
**Figure 39. Backward participation of APEC by sectors (2020), USD Mill.**




Source: OECD-TiVA (2023)

In that same year, the non-APEC industries that contributed the most value added to APEC's exports were distributive trade, transport accommodation and food with 21.7%, followed by energy mining (19.7%), other business services (11.3%), chemicals and non-metallic mineral products (7.5%), information and telecommunications (5.9%), financial and insurance activities (5.1%), basic metals and fabricated metal products (3.8%), computer, electronic, and electrical equipment (3.3%), and non-energy mining (3.2%).

**Figure 40. Backward participation of APEC by industries (2020), %**




Source: OECD-TiVA (2023)

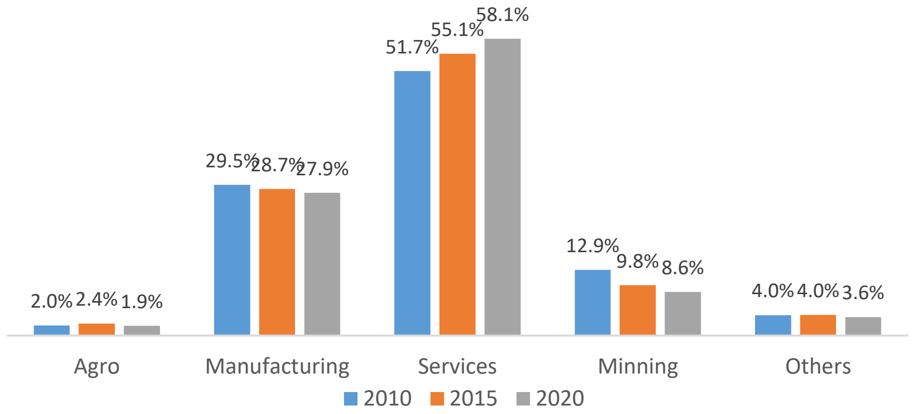
### 3.2.3. Trends in forward and backward participation by sectors

**Forward participation**

Exports of value-added from APEC sectors to the world have shown interesting trends between 2010 and 2020. In 2010, forward participation was led by Services at 51.7%, followed by Manufacturing at 29.5%, Mining at 12.9%, and Agriculture at 2.0%. By 2015, Services increased their share to 55.1%, while Manufacturing slightly decreased to

28.7%. Mining also reduced its share to 9.8%, and Agriculture saw a slight increase to 2.4%. In 2020, this trend continued with Services rising to 58.1%, while Manufacturing declined further to 27.9%, Mining to 8.6%, and Agriculture dropped to 1.9%. These data reflect a clear trend towards greater reliance on Services in value-added exports from APEC, with a consistent decrease in the share of Mining and Manufacturing, while Agriculture has maintained a relatively low and stable share.

**Figure 41. Breakdown of APEC's forward participation by sector (2010-2020)**

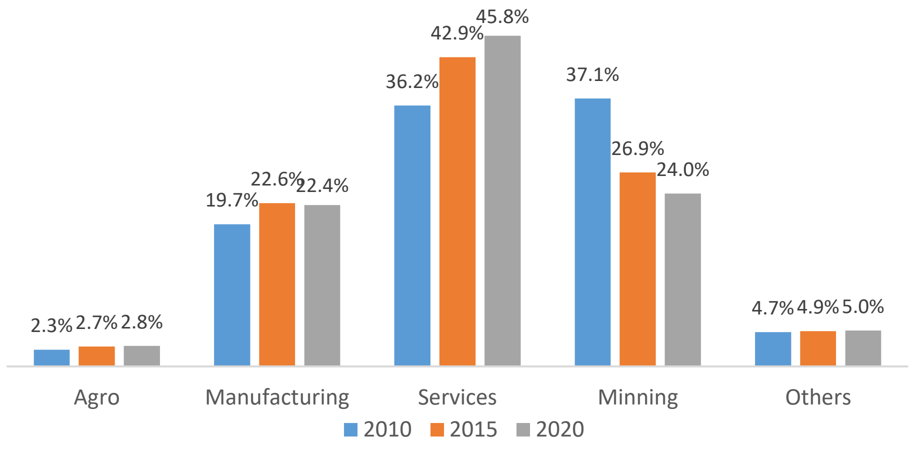



Source: OECD-TiVA (2023)

## Backward participation

Foreign value-added exports from sectors of the world to APEC have shown varied trends between 2010 and 2020. In 2010, the participation was led by Mining with 37.1%, followed by Services at 36.2%, Manufacturing at 19.7%, and Agriculture at 2.3%. By 2015, Services increased their share to 42.9%, while Mining decreased to 26.9%. Manufacturing increased its share to 22.6%, and Agriculture also slightly increased to 2.7%. For 2020, the trend continued with an increase in Services, reaching 45.8%, while Manufacturing remained nearly stable at 22.4%, Mining decreased to 24.0%, and Agriculture grew to 2.8%. These data reflect a clear trend towards greater dependence on foreign Services in the exports of APEC members, with a notable decrease in Mining's share, while Agriculture and Manufacturing have maintained more stable and moderate shares.

**Figure 42. Breakdown of APEC's backward participation by sector (2010-2020)**




Source: OECD-TiVA (2023)

## 4. Main findings and conclusions

Gross exports of APEC have shown sustained growth over the past decades, with the Services sector standing out for its robust performance, notably increasing its share. This sector, which has shown its resilience in economic crises and its ability to cross borders easily, presents significant opportunities for further expansion in the future.

Domestic Value Added (DVA) in APEC's gross exports has steadily grown over the past 25 years, reaching a significant amount in 2020. This growth reflects the evolution of the Services sector, which has increased its share while Manufactures exports have shown a slight decline. The Mining sector has also increased its share, highlighting the importance of DVA in the composition and growth of APEC's exports.

Direct Domestic Value Added (DDC) contained in APEC's gross exports has shown significant growth over the past 25 years, reflecting the substantial contribution of domestic industries to the production of exported goods and services. Domestic Value Added (VAD) contained in these exports has increased steadily, reflecting growth in the Services and Mining sectors, on the other hand, Manufacturing has seen a slight decline in its contribution.

Indirect Domestic Value Added (IDC) in APEC's gross exports has shown significant growth in recent decades, reflecting the region's integration into the Global Value Chain (GVC). This growth has been mainly driven by the Manufacturing sector, which has maintained a solid and growing share in exports, playing a crucial role as an input in GVCs. Although Services exports have also been important, the relative weight of Manufacturing in IDC underscores its central role in APEC's export economies.

Re-imported Value Added (RIM) in APEC's gross exports has shown considerable growth in recent decades, reflecting the incorporation of domestically exported value that is subsequently re-imported for the production of intermediate goods and services abroad. Although it represents a small part of total gross exports, its steady growth underscores its relevance in the region's international economic integration strategies. This phenomenon is particularly observed in sectors such as Services and Mining, which have shown significant increases in their share during the analyzed period.

Foreign Value Added (FVA) in APEC's gross exports has shown fluctuations over the past 25 years, reflecting the contribution of foreign industries to the production of goods and services exported by the region. Its significant growth until 2015 and subsequent decline highlight the changing dynamics of FVA participation in APEC's export economies. During this period, sectors such as Services have maintained steady growth in their share, while Manufacturing has experienced a slight decline.

***Forward Participation in GVCs:***

APEC's forward participation rate in global value chains has shown steady growth over the past 25 years, increasing from 16.6% in 1995 to 23.6% in 2020. Although there was a slight decline between 2005 and 2015, the average annual growth rate of 1.5% from 2010 to 2020 highlights APEC's increasing integration in the production of intermediate goods and services used by destination economies in export production. This evolution underscores APEC's growing role in global value chains and its significant contribution to international trade.

APEC concentrates the majority of its exports destined as intermediate inputs for exports production towards Europe, representing an average of 74.6% in 2010, 74.7% in 2015, and 77.3% in 2020. This reflects a high dependency on Europe as the main destination for integrating its goods and services into global value chains.

Throughout the years 2010, 2015, and 2020, APEC has shown increasing reliance on the Services sector for its exports destined as intermediate inputs, reaching 51.7%, 55.1%, and 58.1% respectively. This contrasts with a gradual decrease in the share of Manufacturing (from 29.5% to 27.9%), Mining (from 12.9% to 8.6%), and Agriculture (from 2.0% to 1.9%), reflecting a clear transition towards a service-based economy in APEC's global value chains.

***Backward Participation in GVCs:***

APEC's backward participation in global value chains has shown consistent growth over the past 25 years, increasing from 4.5% in 1995 to 5.9% in 2020. Although there were fluctuations and a slight decline between 2005 and 2015, with an average annual decrease of -1.3%, the period from 2010 to 2020 recorded an average annual growth rate of 1.5%. This increase reflects APEC's greater integration in the use of foreign intermediate goods and services in its own export production, thereby significantly contributing to the dynamism of global value chains.

APEC obtains the majority of foreign value added used in its exports from Europe, with percentages ranging from 40.0% in 2010, 47.9% in 2015, to 48.8% in 2020. While Europe remains dominant, Asia and South America also contribute significantly, albeit to a lesser extent.

Regarding the acquisition of inputs from the Non-APEC World, APEC has seen an evolution towards greater dependence on Services, which increased their share from 36.2% in 2010 to 45.8% in 2020. Meanwhile, Mining has shown a decrease (from 37.1% to 24.0%), and Manufacturing has shown a moderate increase (from 19.7% to 22.4%), with a slight improvement in Agriculture (from 2.3% to 2.8%). This trend underscores a greater integration of external services in APEC's value-added operations, although Mining and Manufacturing also remain significant contributors.

## 5. References

APEC. (2021). APEC TiVA Initiative Report Two-Better Understanding Global Value Chains in the APEC Region. Retrieved from: https://www.apec.org/publications/2021/02/apec-tiva-initiative-report-two---better-understanding-global-value-chains-in-the-apec-region

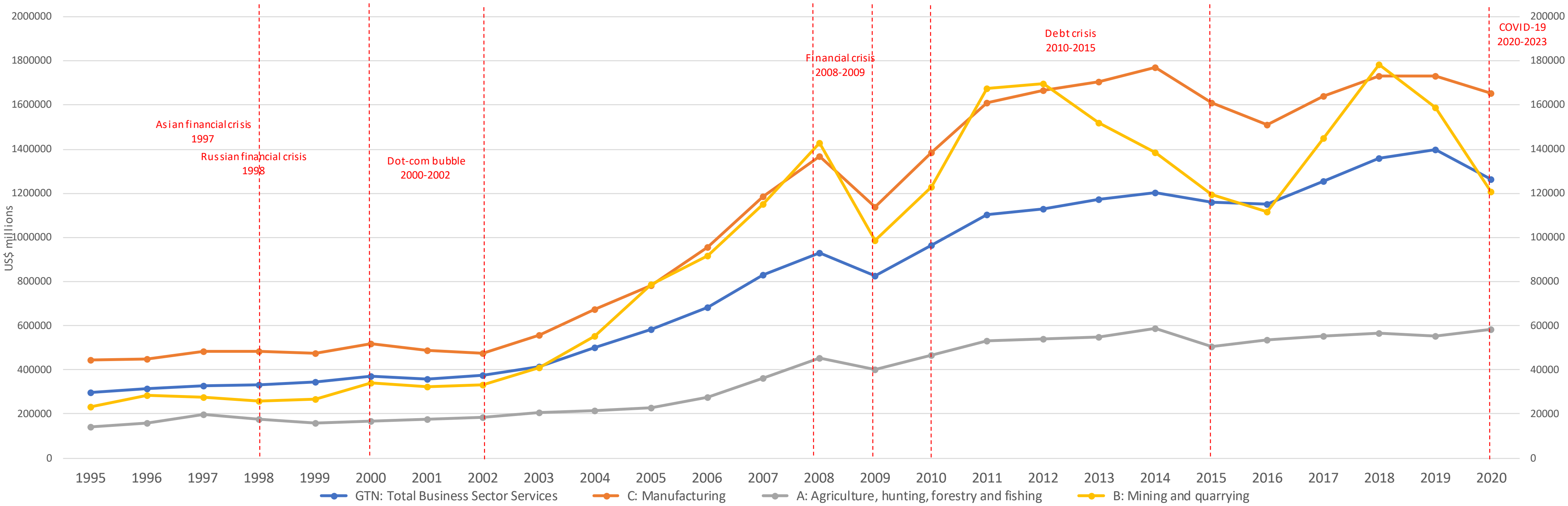
APEC. (2019). Methodologies of Constructing the APEC TiVA Database for Better Understanding Global Value Chains in the APEC Region. Retrieved from: https://www.apec.org/publications/2019/11/methodologies-of-constructing-the-apec-tiva-database

Koopman, R., Wang, Z., y Wei, S. J. (2014). Tracing value-added and double counting in gross exports. American Economic Review, 104(2), 459-94.

OECD. (2023). Guide to OECD's Trade in Value Added (TiVA) Indicators, 2023 Edition. *OECD Directorate for Science, Technology and Innovation*.

## Annex

*APEC Domestic Value Added content of gross exports (1995-2020), (USD millions)*




Source: OECD-TiVA (2023)