National Accounts

Gross Domestic Product 2018-2019 figures for Aruba

2018 definite figures and 2019 preliminary figures

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Preface

This publication provides quantitative information on the Gross Domestic Product for 2018 and 2019. The 2018 estimates are definite while the 2019 estimates are preliminary. This publication covers the gross domestic product by production and expenditure approach by type of economic activity at current prices.

The figures contained in this publication are the most recent figures and revisions available at the time of compilation. The objective of this publication is to provide reliable data for informed discussion amongst planners, researchers and decision makers about the performance and structure of the economy of Aruba.

Director Central Bureau of Statistics

Marlon Faarup

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1. Introduction

National Accounts provides a comprehensive description of the complex activities taking place within an economy and between the economy and the rest of the world. In this system - consisting of macroeconomic accounts, balance sheets and tables -economic data are compiled in a mutually consistent way using a set of internationally accepted concepts, definitions, classifications, and accounting rules. These concepts, definitions, classifications and accounting rules are extensively elaborated on in the System of National Accounts 2008 (2008 SNA).

One of the most important figures presented in the National Accounts is the Gross Domestic Product (GDP). This publication presents the latest GDP figures for Aruba, namely, the definite 2018 GDP figures and the preliminary GDP figures for 2019 in nominal terms. This is a new publication by the CBS which provides an overview of the components and the industries that contributed to the development of the Aruban economy. While both years will be analyzed, more focus will be given to 2019.

The results are disseminated according to both the expenditure and the production approach. The latter will also cover the value of output and the value of intermediate consumption. Technical notes on the adjustments to the 2018 estimates, methodologies used to estimate the GDP according to both approaches and balancing differences are presented in the Annex.

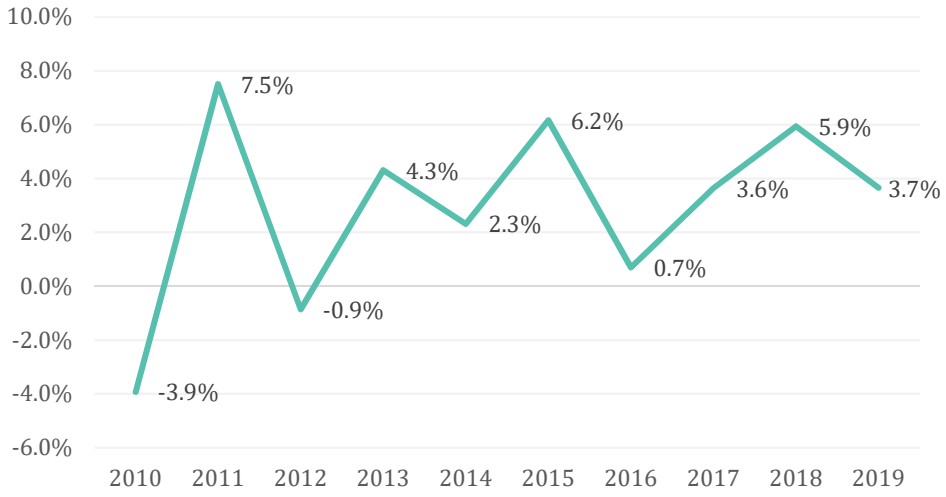
2. GDP by expenditure approach

The GDP by expenditure approach measures the sum of final expenditures in purchasers' prices minus imports and yields GDP at market prices. The final expenditures are equal to final consumption expenditure, gross capital formation, and exports of goods and services.

2.1 Recent developments

In 2018 the GDP reached Afl. 5,864 million, a growth of 5.9 percent relative to 2017, while the GDP improved again in 2019 with 3.7 percent totaling at Afl. 6,078 million. The development in the Aruban economy has been stable during the previous 10 years. The GDP has grown for the last 7 years consecutively prior to 2019, with an average yearly growth of 3.8 percent during this 7-year period (Figure 1). This is 0.9 percentage points higher than the average yearly growth in these 10 years (2.9 percent), which is dragged down by weak performances related to the closure of the refinery (2010, 2012).

Figure 1: Nominal GDP growth 2010-2019



2.2 Components of the GDP

Final consumption, which consists of household consumption and government consumption , expanded by 6.1 percent in 2018 while exhibiting a minor improvement of 1.2 percent in 2019 (Table 1). The developments between household and government consumption were nearly identical as growths of 6.1 percent and 6.2 percent for 2018 and growths of 1.2 percent and 1.1 percent were recorded for household and government consumption respectively for 2019. In 2018, the household goods and services, which recorded an increase, included domestic appliances, gasoline, transport equipment (motor vehicles) and gambling and betting services. For 2019 these were utilities (electricity, water and gas), gasoline and gambling and betting services.

Total gross capital formation (investments) grew significantly in 2018 (15.5 percent) and moderately (3.8 percent) in 2019. Private investment drives total gross capital formation as it holds a share of 96 percent of total investment while the government contributes with about 4 percent. Investments goods that registered a significant expansion in 2018 were machinery, basic metals and fabricated metal products and wood products. Only basic metal and fabricated metal products and office and electrical equipment improved significantly in 2019. Construction services increased in both years.

The economy of Aruba recorded a net trade deficit (exports minus imports) of -Afl. 41. million in 2018 and rebounded with a net trade surplus of Afl. 68 million in 2019. Exports of goods and services expanded by 5.5 percent in 2018 and 5.1 percent in 2019 exhibiting a consistent growth. The main driver of exports in both years was tourism. Imports of goods and services increased in 2018 with 8.5 percent which is a stronger growth than exports causing the trade deficit in 2018. On the other hand, imports grew moderately with 2.4 percent, weaker than developments in exports which led to the trade surplus.

Table 1: GDP by Expenditure approach	**In Afl. Millions**			**Growth in %**	
	2017	2018	2019 [2]	2018	2019 [2]
Final consumption expenditure at purchasers' prices	4,326.3	4,592.2	4,646.1	6.1%	1.2%
Household	3,051.9	3,239.2	3,278.6	6.1%	1.2%
Government	1,274.4	1,353.0	1,367.6	6.2%	1.1%
Gross capital formation	1,137.6	1,313.7	1,363.9	15.5%	3.8%
Private[1]	1,090.4	1,259.4	1,332.9	15.5%	5.8%
Public	47.2	54.3	31.0	15.1%	-42.8%
Exports of goods and services	4,015.9	4,237.2	4,451.6	5.5%	5.1%
Less: Imports of goods and services	3,944.3	4,278.7	4,383.1	8.5%	2.4%
Nominal gross domestic product at market prices	5,535.4	5,864.4	6,078.5	5.9%	3.7%

Source: Central Bureau of Statistics, Aruba

[1]) Includes Changes in inventories; 2) Preliminary figures

2.3 Contribution to growth

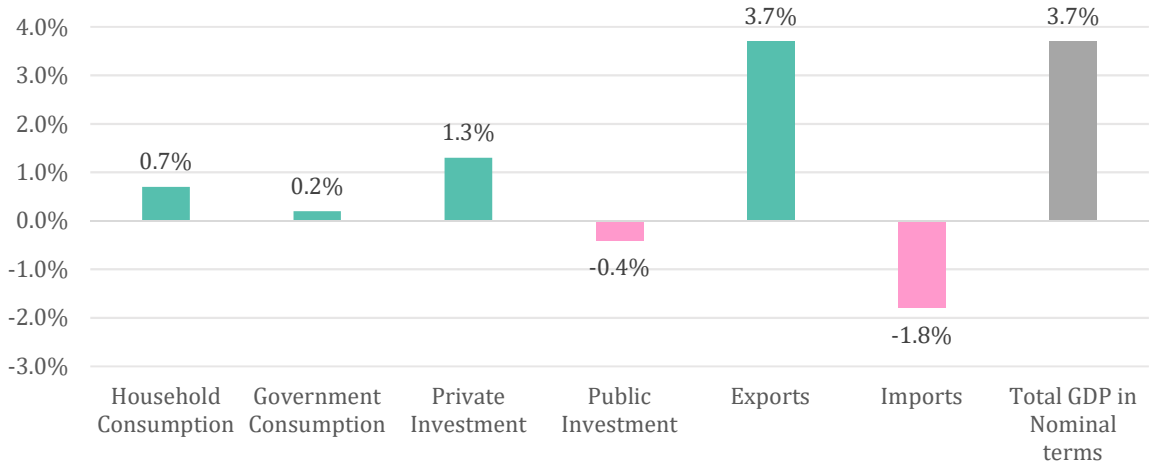
Economic growth can be analyzed from numerous points of view, while the previous analysis on the components of GDP highlights the components' individual growth, which is important to show how dynamic the components are in relation to economic development. It does not, however, give indication as to how much these components are most responsible for accumulation to the overall GDP. It is a combination of the size of the component of GDP concurrently with its development that determines its contribution to overall GDP.

Figure 2 exhibits the contribution to growth for 2019. Exports contributed the most in 2019 with 3.7 percent which is coincidentally identical to overall growth. Imports affect GDP negatively and increase in total imports resulted in a negative contribution of -1.8 percent. Both household and government consumption contributed positively to growth, albeit minimally.

Investments illustrate perfectly the importance of examining contributions to growth as private investments grew by 5.8 percent (the component with the largest growth), but only contributes with 1.3 percent to total GDP growth. This is because total investment is the smallest of all the components of GDP.

Public investment, on the other hand, registered a drop of -42.8 percent in 2019 yet contributed negatively with merely -0.4 percent, again due to the size of the sub component of total investment.

Figure 2: Contribution to GDP growth 2019



3. GDP by production approach

The production approach measures the gross value added of each industry in the Aruba economy. The total GDP between approaches does not deviate since both approaches are balanced at the end of the production of the GDP figures. The International Standard Industrial Classification of All Economic Activities (ISIC version 4.0) applied to the relevance of the local economy is used to classify the industries in the Aruban economy (Aruba ISIC). In its most disaggregated form, the Aruba ISIC distinguishes 96 industries, these are aggregated to 18 industries for a more comparable analysis.

3.1. Largest and smallest industries in the economy

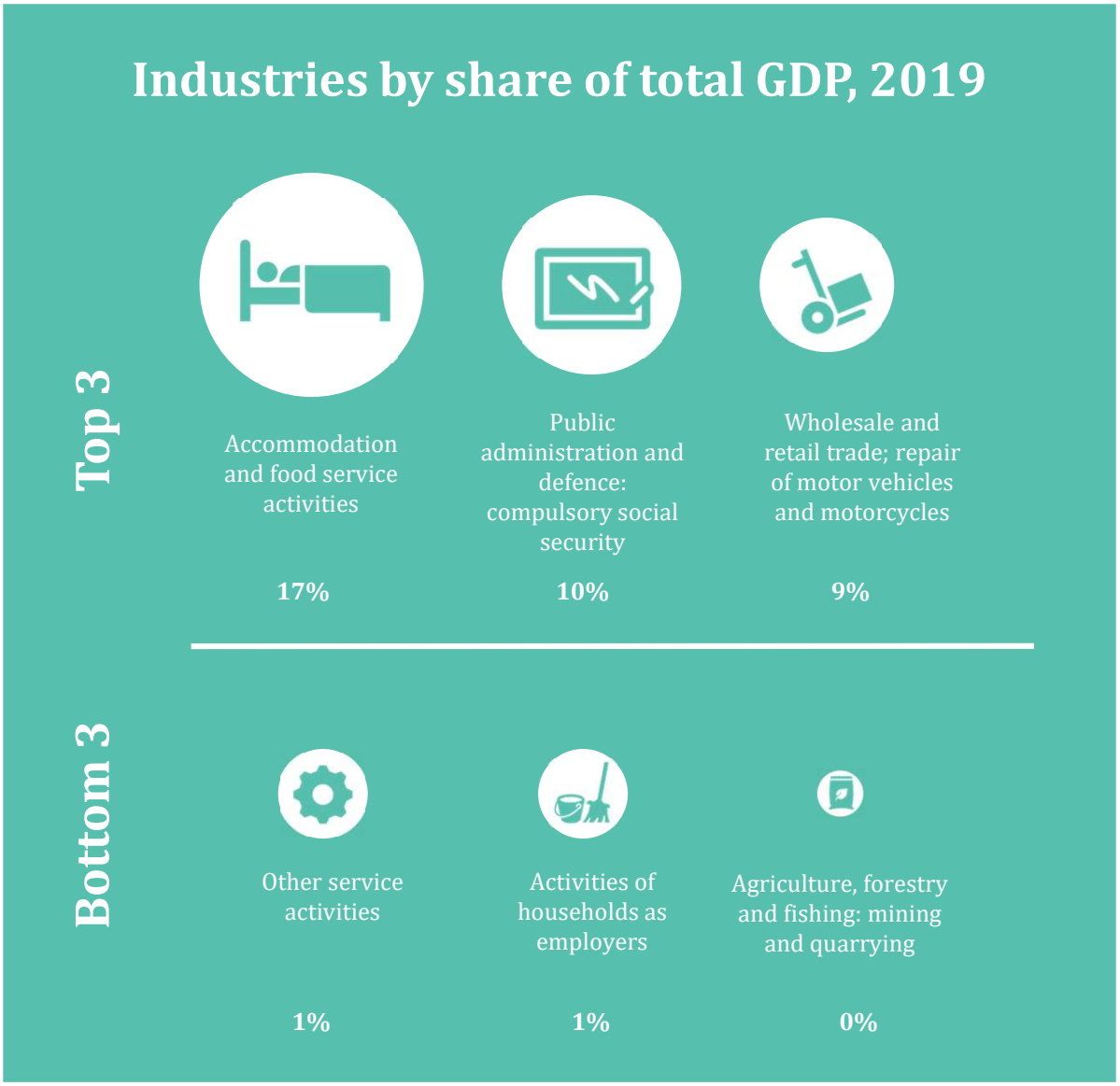
While Aruba's economy is relatively small (GDP of only Afl. 6,078 million in 2019) there are several of the 18 industries that do extremely well, while others contribute only slightly to the economy. The top 3 industries (Figure 3) in Aruba classified by their share in the last 5 years were namely *Accommodation and food service activities*, which is the largest industry, *Public administration and defence, compulsory social security* and *Wholesale and retail trade, repair of motor vehicles and motorcycles.*

Accommodation and food services activities registered a share of about 17 percent of total GDP in 2019. This industry is almost completely driven by tourism as it consists of hotels and restaurants, which are more frequented by tourists than the local population. *Public administration and defence, compulsory social security* reached 10 percent of total GDP in 2019. This industry is the government of Aruba which is the second largest industry in the economy. *Wholesale and retail trade, repair of motor vehicles and motorcycles* got to a share of 9 percent of total GDP. This industry provides goods to both local consumers and tourists.

On the other hand, the 3 smallest industries (Figure 3) were *Agriculture, forestry and fishing; mining and quarrying*, *Other service activities* and *Activities of households as employers*. The smallest industry, *Agriculture, forestry and fishing; mining and quarrying,* accounted for only 0.03 percent of total GDP as most food products in Aruba are imported and local production is minimal.

Other service activities, which consists of activities of membership organizations, repair of computer, personal and household goods and other personal services, and *Activities of households as employers* (e.g. Live in personnel) each had a share of 0.8 percent of GDP.

Figure 3:Top 3 & Bottom 3 industries by share of total GDP in 2019



3.2 Industry performance in 2019

Even though the size of the industries presents information on the largest contributors to the economy there is also year on year performance of each industry individually (Table 2). Total gross value added for 2019 grew by 2.1 percent. The industries that experienced an exceptional growth in 2019 were *Agriculture, forestry and fishing; mining and quarrying,* which improved by 28.4 percent, *Electricity, gas, steam and air conditioning supply/Water supply; sewerage, waste management and remediation activities*, which increased by 24.8 percent and *Administrative and support service activities*, which grew by 10.2 percent and was particularly related to renting and leasing of recreational and sporting goods, security services, services to buildings and landscaping services. Conversely, there were a couple of industries that experienced drops in 2019 such as *Manufacturing* that fell by -17.6 percent attributed to sluggish performances in transshipment activities of the refinery but also in the manufacturing of furniture sub industries. *Real estate activities* faced a dip of -5.6 percent due to non-residential rentals. Finally, *Total taxes less subsidies on products* grew by 19.8 percent and is partially related to the introduction of the B.A.V.P tax.

Table 2: GDP by production approach	**In Afl. Millions**		**Growth in %**
Industries	2018	2019 [1]	2019 [1]
Agriculture, forestry and fishing; mining and quarrying	1.3	1.7	28.4%
Manufacturing	189.1	155.8	-17.6%
Electricity, gas, steam and air conditioning supply/Water supply; sewerage, waste management and remediation activities	192.2	239.9	24.8%
Construction	284.7	295.6	3.8%
Wholesale and retail trade; repair of motor vehicles and motorcycles	552.1	573.0	3.8%
Transportation and storage	288.9	295.8	2.4%
Accommodation and food service activities	1,011.4	1,029.4	1.8%
Information and communication	165.0	167.7	1.6%
Financial and insurance activities	405.9	443.3	9.2%
Real estate activities	582.0	549.1	-5.6%
Professional, scientific and technical activities	141.3	137.4	-2.7%
Administrative and support service activities	278.7	307.0	10.2%
Public administration and defence; compulsory social security	628.8	620.1	-1.4%
Education	136.8	145.9	6.7%
Human health and social work activities	234.7	234.1	-0.3%
Arts, entertainment and recreation	161.8	164.8	1.9%
Other service activities	42.9	45.8	6.6%
Activities of households as employers	45.3	47.8	5.4%
Total	5,343.0	5,454.0	2.1%
Total taxes less subsidies on products	521.4	624.4	19.8%
Nominal gross domestic product at market prices	**5,864.4**	**6,078.5**	**3.7%**

Source: Central Bureau of Statistics, Aruba

1) Preliminary figures

3.3 Output and intermediate consumption

The gross value added is the value of output less the value of intermediate consumption. Output can be considered sales while intermediate consumption are the goods and services used in the process of producing the output (or simply the inputs). Industries can increase their gross value added by either increasing sales or in a reduction of their inputs.

Industries that have a high intermediate consumption to output ratio are considered industries that are less efficient in their production of goods and services as more inputs are used to produce the output. In general industries that produce goods have a higher ratio compared to industries that produce services. And in a typical economy this ratio is roughly a half. Both these statements are the case for Aruba's economy (Table 3).

Table 3: Output and intermediate consumption 2019

	Output of industries at basic prices (in AFL million)	Intermediate consumption of industries at purchasers' prices (in AFL million)	Intermediate consumption to output ratio
Agriculture, forestry and fishing-Mining and quarrying	4.3	2.6	0.61
Manufacturing	391.1	235.4	0.60
Electricity, gas, steam and air conditioning supply / Water supply; sewerage, waste management and remediation activities	915.0	675.0	0.74
Construction	652.8	357.2	0.55
Wholesale and retail trade; repair of motor vehicles and motorcycles	1,224.8	651.7	0.53
Transportation and storage	505.7	209.9	0.42
Accommodation and food service activities	2,394.5	1,365.1	0.57
Information and communication	289.0	121.3	0.42
Financial and insurance activities	805.7	362.4	0.45
Real estate activities	812.3	263.2	0.32
Professional, scientific and technical activities	225.9	88.5	0.39
Administrative and support service activities	555.8	248.9	0.45
Public administration and defence; compulsory social security	953.6	333.5	0.35
Education	178.6	32.6	0.18
Human health and social work activities	376.4	142.3	0.38
Arts, entertainment and recreation	362.9	198.1	0.55
Other service activities	88.5	42.7	0.48
Activities of households as employers	48.5	0.8	0.02
Total	**10,785.2**	**5,331.2**	**0.49**

Most industries dwell around the 0.5 ratio, while the ratio for the economy as a whole is at 0.49. There are a few industries with an intermediate consumption to output ratio which are on the higher side. The industries that produce a service, such as, but not limited to, *Professional, scientific and technical activities*, *Real estate activities* and *Education* have a ratio below 0.4. These are services that, in most cases, use very few goods in their production process.

Industries that produce goods as opposed to services have a higher ratio, for instance *Agriculture, forestry and fishing-Mining and quarrying*, *Manufacturing* and *Electricity, gas, steam and air conditioning supply / Water supply; sewerage, waste management and remediation activities,* all have a ratio above 0.6.

The value of the inputs (such as water for the agricultural sector and raw materials for manufacturing) needed for production in these industries is high, which causes this higher ratio. The 0.74 ratio for the electricity and water supply industry is somewhat biased. Even though, a substantial quantity of inputs (heavy fuel oil) is used for the production of water and electricity, the WEB sells electricity to Elmar, which in turn sells to consumers. This signifies that electricity purchased from the WEB is categorized as inputs for Elmar adding to the total intermediate consumption of the industry.

In summary, overall the total industries in the Aruban economy have an intermediate consumption to output ratio that is in line with a typical economy.

4. Annex

4.1 Technical notes on the adjustments of the estimates of the Gross Domestic Product (GDP) for 2018 (Table A1)

On the production approach the major adjustment was related to improvement to data coverage. The preliminary estimates make use of Denton's proportional benchmarking method (recommended by the IMF) with sales tax data as the benchmarking variable whenever financial statements are not yet available. Both the output and intermediate consumption are benchmarked. When financial statements are available, these replace the preliminary figures.

The significant difference in the *Accommodation and food service* industry is related to an over estimation of intermediate consumptions in the preliminary estimates resulting in a lower gross value added for this industry. The large discrepancy in the *Financial and insurance service* industry is related to a combination of improved data coverage and new data that was not previously available. Finally, the discrepancy (the largest in the production approach) *Real estate activities* is attributed to new data that was previously not available.

On the demand approach, government consumption, government investments (gross capital formation), exports and imports of goods and services had only minor changes as the sources are administrative data and can be considered "hard" data. The discrepancies in household consumption and private investments are related to the availability of updated data and balancing differences.

4.2 Methodology

Approaches to measure GDP

- The expenditure approach:
  The sum of final expenditures in purchasers' prices minus imports yields GDP at market prices. The final expenditures are equal to final consumption expenditure, gross capital formation, and exports of goods and services.

- The production approach:
  The GDP is equal to the sum of value added. This implies that GDP at market prices is equal to the total industry output at basic prices minus the total industry intermediate consumption in purchasers' prices plus taxes less subsidies on products.

- The income approach:
  GDP at market prices is equal to the sum of compensation of employees, taxes less subsidies on production and imports, gross mixed incomes, and operating surplus.

The CBS has applied only the expenditure and production approaches for the GDP estimates (2000-2019). The income approach is calculated when the Supply and Use Table framework is produced (last 2013). The next Supply and Use Table framework is planned for development in 2024.

Table A1: Discrepancies between preliminary and definite estimates for 2018	
Industries	2018
1. Production approach	In Afl. millions
Industries	
Agriculture, forestry and fishing; mining and quarrying	0
Manufacturing	10
Electricity, gas, steam and air conditioning supply; Water supply; sewerage, waste management and remediation activities	-1
Construction	2
Wholesale and retail trade; repair of motor vehicles and motorcycles	11
Transportation and storage	1
Accommodation and food service activities	20
Information and communication	-3
Financial and insurance activities	35
Real estate activities	91
Professional, scientific and technical activities	1
Administrative and support service activities	-8
Public administration and defence; compulsory social security	-1
Education	-3
Human health and social work activities	-11
Arts, entertainment and recreation	-10
Other service activities	-2
Activities of households as employers	0
Total	**132**
Total taxes less subsidies on products	0
Nominal gross domestic product at market prices	132
2. Expenditure approach	
Final consumption expenditure at purchasers' prices	50
Household	47
Government	3
Gross capital formation	77
Private[1]	77
Public	0
Exports of goods and services	7
Less: Imports of goods and services	-1
Nominal gross domestic product at market prices	132

Source: Central Bureau of Statistics, Aruba

[1]) Includes Changes in inventories

GDP by expenditure approach

The expenditure method implies that an estimate is made for the following GDP components:

- Final consumption expenditure
  - Household consumption expenditure
  - Government consumption expenditure
- Gross capital formation
  - Private gross capital formation
  - Public gross capital formation
  - Changes in inventories
- Exports of goods and services
  - Regular exports of goods
  - Free-zone exports of goods
  - Exports of services
  - Tourism expenditures
- Imports of goods and services
  - Regular imports of goods
  - Free-zone imports of goods
  - Imports of services

Final consumption expenditure

Final consumption expenditure consists of the expenditure, including imputed expenditure, incurred by resident households, resident non-profit institutions serving households, and general government on consumption of goods and services.

Method of estimation

The final consumption expenditures are split up into household final consumption expenditure and government final consumption expenditure.

The projection of the household final consumption expenditure is mainly based on the Income and Expenditure survey 2016. The Income and Expenditure survey 2016 classifies the expenditure categories according to a national product classification based on the COICOP (Classification of Individual Consumption by Purpose). By means of a bridge table the expenditures are linked to SNA concepts and classifications. Trade data serves as a key indicator in the model to estimate the development in yearly consumption. The final consumption expenditure incurred by non-profit institutions serving households is included in the household final consumption expenditure as presented in this publication. Administrative data from non-profit institutions is used for this estimation. The government final consumption expenditure consists of the purchases of goods and services bought for redistribution and the non-market output. Government administrative data is used for this estimation.

Gross capital formation

Gross capital formation is measured by the total value of the gross fixed capital formation, changes in inventories and acquisitions less disposals of valuables. Gross fixed capital formation is equal to the total value of producer's acquisitions less disposals of fixed assets plus certain additions to the value of non-produced assets realized by the productive activity of institutional units.

Method of estimation

The investment schedules in the annual reports of the government and the Government Budget are analyzed and linked to SNA concepts and classifications in order to estimate the public gross fixed capital formation. The computation of private gross fixed capital formation in machinery and equipment and the construction materials is modeled based on the foreign trade statistics as the majority of machinery and equipment and construction materials are imported.

Exports of goods and services

Exports of goods and services consist of purchases, barter, or receipts of gifts or grants, of goods and services by non-residents from residents.

Method of estimation

Data on exports of goods are based on the Foreign Trade Statistics (FTS) that are derived from the registration of all documents by the customs department. The goods are reclassified in accordance with the provisional (CPC) by means of a bridge table. Adjustments are made for commodities that are not included in the FTS: parcel post, mineral products, repair on goods, and goods used by the Dutch marines. Figures on services are obtained from the balance of payments compiled by the Central Bank of Aruba. The Central Bureau of Statistics estimates the refining fee.

The tourism expenditures on goods and services are initially based on the tourism expenditure survey, conducted by the Central Bureau of Statistics and are balanced with administrative data from the balance of payments.

Imports of goods and services

Imports of goods and services consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non-residents.

Method of estimation

Data on imports of goods come from the Foreign Trade Statistics (FTS) that are derived from the registration of all documents by the customs department. The goods are reclassified in accordance with the provisional (CPC) by means of a bridge table. Adjustments are made for commodities that are not included in the FTS: parcel post, mineral products, repair on goods and goods used by Aruban offices abroad.

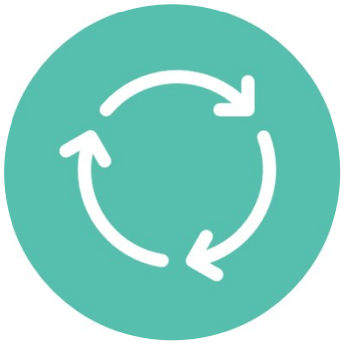
Figures on services are obtained from the balance of payments compiled by the Central Bank of Aruba. Adjustments are incorporated for Aruban offices abroad, for construction services and for direct purchases abroad by residents.

GDP by production approach

The production method is used to estimate GDP as the sum of the gross value added for all industries and taxes less subsidies on products.

The industries are:

- Agriculture; Forestry and fishing - Mining and quarrying;
- Manufacturing;
- Electricity, gas, steam and air conditioning supply/Water supply; Sewerage, waste management and remediation activities;
- Construction;
- Wholesale and retail trade; repair of motor vehicles and motorcycles;
- Transportation and storage;
- Accommodation and food service activities;
- Information and communication;
- Financial and insurance activities;
- Real estate activities;
- Professional, scientific and technical activities;
- Administrative and support service activities;
- Public administration and defense; compulsory social security;
- Education;
- Human health and social work activities;
- Arts, entertainment and recreation;
- Other service activities.



Method of estimation

The gross value added is the value of output less the value of intermediate consumption by industries. The gross value added for most industries is obtained via administrative data, while for the other industries the estimate is derived from custom made (modelling) approaches. The aim is to obtain financial statements for 70 percent of the enterprises in each industry. The remaining 30 percent is raised according to administrative wage data from the Social security bank (SVB). The model approaches use SVB-data and indicators deemed important for the specific industry (for example, total children under 4 for the daycare services sub industry).

4.3 Balancing differences

Both the Expenditure approach and the Production approach are estimated independently from each other and findings or calculations generated in one approach does not influence the other. At the end of the calculation process both approaches are confronted. As a general rule of thumb a 5 percent discrepancy is considered minor enough for a smooth balancing.

The difference between both approaches was under 5 percent in 2018 and 2019 (Table A2). The steps taken to balance the GDP are the following. Firstly, all sub industries on the production side are analyzed and checked to determine if the raised components follow the enterprises with administrative data. It is possible that developments in 1 large enterprise influences the whole industry. This enterprise is then excluded and the imputation is performed again by raising the enterprises and the results are subsequently compared to check if there are changes in the trend of the industry. If this is the case, the new estimation replaces the previous one. In most cases the production approach does not change as the administrative data is complete enough for a strong calculation.

The second step in the balancing process is to assess household consumption and private investment on the demand side as these are the only components that are estimated partially using a model. Government consumption, public investment, exports and imports calculations are collected from administrative data making them more solid and therefore are only changed if there is an update in the administrative data. Given that the GDP based on the production approach is reviewed and verified in the first step of balancing and the other components on the demand approach are considered solid, the remaining discrepancy is distributed pro rata to household consumption and private investment. The changes after the distribution of the discrepancy are analyzed and if all trends remain the same the GDP is considered balanced.

Table A2: GDP balancing

	2018	2019
Production approach in Afl. Millions	5,864.4	6,078.5
Expenditure approach in Afl. Millions	5,712.6	5,939.9
Discrepancies in Afl. Million	151.8	138.6
Discrepancies in percentage	3%	2%
Addition to Household consumption in Afl. Millions	108.1	97.3
Addition to private investment in Afl. Millions	43.7	41.3

For more information on National accounts, for a more detailed dissemination of the data, or for a presentation of the data and methodologies used please contact:

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