INTERNATIONAL MONETARY FUND

IMF Country Report No. 18/288

GEORGIA

TECHNICAL ASSISTANCE REPORT—REPORT ON THE PRODUCER PRICE INDEX AND RESIDENTIAL PROPERTY PRICE INDEX MISSION

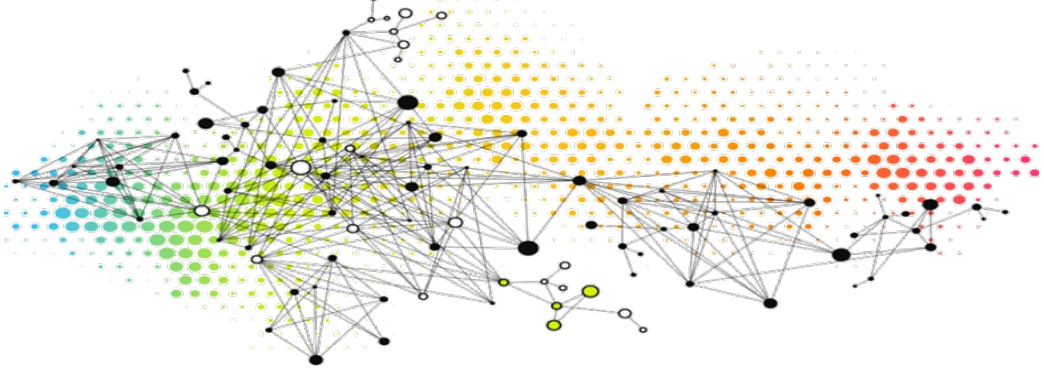
September 2018

This Technical Assistance report on Georgia was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed on May 2018.

Copies of this report are available to the public from

International Monetary Fund • Publication Services
PO Box 92780 • Washington, D.C. 20090
Telephone: (202) 623-7430 • Fax: (202) 623-7201
E-mail: publications@imf.org Web: http://www.imf.org
Price: $18.00 per printed copy

International Monetary Fund
Washington, D.C.



GEORGIA

AUGUST 2018

REPORT ON THE PRODUCER PRICE INDEX AND RESIDENTIAL PROPERTY PRICE INDEX MISSION, (APRIL 25–MAY 4, 2018)

Prepared by Thomas Alexander, Vanda Guerreiro, and Andrew Baer (Expert)

CONTENTS

Glossary

CPC	Statistical Central Product Classification
CPA	Classification of Products by Activity
CPI	Consumer Price Index
Geostat	National Statistics Office of Georgia
KAU	Kind-of-Activity Unit
NACE	Statistical Classification of Economic Activities in the European Community
NAPR	National Agency of Public Registry of Ministry of Justice
OLS	Ordinary Least Squares
PPI	Producer Price Index
ROSC	Report on the Observance of Standards and Codes
RPPI	Residential Property Price Index

SUMMARY OF MISSION OUTCOMES AND PRIORITY RECOMMENDATIONS

1. The purpose of the mission was to assist the National Statistics Office (Geostat) in developing a residential property price index (RPPI) and expanding coverage of the producer price index (PPI). The mission visited Tbilisi during April 25 to May 4, 2018. This was the first price statistics mission to Georgia conducted under the auspices of the three-year *Project to Improve National Accounts and Price Statistics in Eastern and Southeastern Europe*. This project is funded by the Government of The Netherlands.

2. Geostat compiles a monthly PPI for industrial products. It covers mining and quarrying; manufactured products; and electricity energy, gas, steam, and hot water. It includes a separate domestic PPI and an export price index. PPI coverage of the services sector is currently limited to freight transport, and should be expanded to include additional services. The improved coverage of the PPI will facilitate the assessment of developments in the production and prices of services and provide more reliable indicators to derive estimates of GDP in constant prices.

3. The compilation of an RPPI will facilitate the assessment of developments and risks in property markets. It will therefore be useful for monetary policy as it will improve the understanding of the linkages between property asset prices and financial assets. The National Bank of Georgia compiles a rudimentary index that tracks residential and commercial property prices in two districts of Tbilisi—one is known for expensive properties and the other for modestly priced properties. The index is therefore quite limited and is not disseminated.

4. On the RPPI, the mission proposed that, as a start, the index be restricted to the capital city and cover all transactions in new apartments and houses. Initially, the index will not include transactions in existing dwellings because of the complexity in covering these dwellings. Existing dwellings may be covered at a later stage when the RPPI methodology is stabilized and the staff gain the experience and skills in compiling the index.

5. Geostat should be able to compile the RPPI on a quarterly basis and disseminate the first index for the first quarter of 2021, in mid-May 2021. The RPPI will be developed by the same staff compiling the CPI; however, the production schedule for the RPPI can be arranged around the production and release schedule for the CPI to accommodate the available staff resources. Based on the current CPI production schedule and the proposed RPPI development plan, additional staff would not be required.

6. The RPPI should remain a stand-alone index and should not be included in the CPI. In addition to the difference in periodicity, the CPI is an established indicator and the quality may be jeopardized with the inclusion of a new index that would necessarily be of lower quality in the first years.

7. The most suitable data source for the RPPI may be the National Agency of Public Registry of Ministry of Justice (NAPR). Geostat informed the mission that it is compulsory to register all transactions in dwellings with the NAPR. Therefore, the NAPR may collect information on transaction value, transactors, dwelling specifications, and location. An alternative source would be the two main websites for real estate transactions.

8. In terms of the PPI, the mission noted that, whereas Geostat has made substantial improvements since the 2011 ROSC, there is scope for further enhancement. In particular, Geostat has improved index weighting by using the value of output instead of turnover, created electronic questionnaires, located on the Geostat main website, to facilitate electronic data reporting, and added metadata for PPI to the Geostat website.

9. The PPI covers approximately 25 percent of output; however, services comprises about 50 percent of output. Thus, with the relative size of service activities, the importance of measuring services inflation from the producer's perspective has increased. The largest contributors to the output of services are wholesale and retail trade, and construction. The data collection cost of expanding coverage to wholesale and retail trade is likely to be very large, as approximately 50 percent of active business units engage in this activity. The price changes for the other activities that may be considered for the index, such as passenger transport and hotels and restaurants are likely to follow CPI closely. In this regard, the mission instead recommends that coverage be expanded to Warehousing and storage services; Telecommunications services; and Travel agency and tour operator services. Adding an index for Warehousing and storage would allow Geostat to build on the success with measuring the related Freight transport services. A new index for telecommunications will facilitate more accurate deflation of nominal output, particularly with respect to sales of telecommunications services to enterprises.

Table 1. Priority Recommendations

Target Date	Priority Recommendation	Responsible Institutions
July 2018	*Identify potential data sources for the RPPI and receive first data sets.*	**Geostat**
September 2019	*Compile an experimental RPPI.*	**Geostat**
January 2020	*Expand PPI coverage to include Warehousing and storage services; Telecommunications; Travel agency and tour operator services.*	**Geostat**
January 2020	*Develop activity-specific questionnaires that specify product characteristics; e.g., price and quality determining features.*	**Geostat**

Further details on the priority recommendations and the related actions/milestones can be found in the action plan under *Detailed Technical Assessment and Recommendations*.

RESIDENTIAL PROPERTY PRICE INDEX

A. Introduction

10. The main users of the RPPI are the national accounts compilers, the National Bank of Georgia, and private developers. The national accounts compilation system will use the RPPI to derive constant price estimates for imputed rents and owner-occupied housing. In this last case, a sub-index for new dwellings should be compiled. The estimation of owner-occupied housing requires a net approach, e.g., transactions within the household sector must be disregarded and only the new dwellings sub-index will be in line with this requirement.

11. The RPPI is, regardless of its use as a deflator for national accounts, a standalone index with its own meaning to be taken as a macroeconomic and financial stability indicator. Its dissemination should not be taken together with the CPI. Geostat is committed to developing an RPPI as part of an effort to assess developments and risks in property markets, and to better understand the linkages between property markets and financial soundness.

12. The National Bank of Georgia has been compiling a property price index. It covers two districts of Tbilisi: an expensive district and a modest district; taking offered prices from a newspaper that is now a website for its internal use. This index is not published.

13. Recent changes in the administrative procedures to document housing transactions have improved the recording of transactions. As a result, recording of transactions is more comprehensive and organized. All transactions are now recorded with the National Agency of Public Registry of Ministry of Justice (NAPR).[1] Based on the mission's preliminary assessment, the information collected by the NAPR may be sufficient to compile a robust RPPI.

14. Interaction with data providers, other compilers, and within Geostat should be frequent and direct, both at the management and technical levels. At the management level, strategic decisions and results can be assessed together. The CPI staff should have direct contacts with experts from different institutions and within Geostat namely with the IT team and NA to share practices and work out best methodology and system solutions at the technical level.

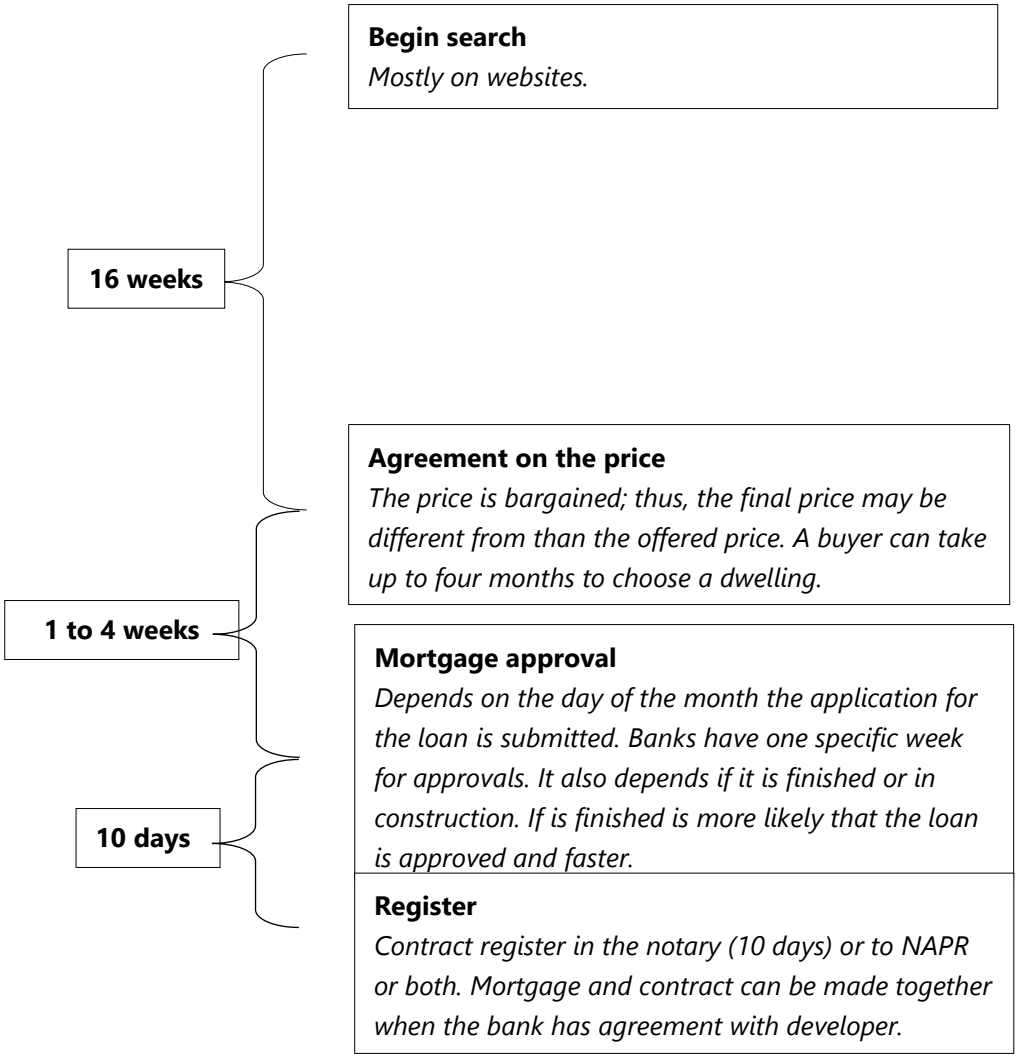
B. Characteristics of the Real Estate Market

15. The mission received a detailed description of the real estate market and the resources available for the RPPI compilation. It made a general assessment of the market characteristics, of the staff motivation and qualifications as well as of the possibility of obtaining

[1] The NAPR is expected to implement blockchain technology in the near future.

data. The mission also presented a sequence of the buying process; however, staff need to collect additional information regarding the process and the relevant tax scheme.

Figure 1. Timeline of Residential Property Purchases



16. Buyers use websites as the main source to search for a dwelling, where sellers (agencies, private owners, and developers) advertise properties for sale. The websites provide information on the asking price and dwelling characteristics.

17. In general, buyers purchase new dwellings directly from the developers but existing dwellings are usually purchased from private owners or through an agency/broker. After selecting the property on the website, the buyer will contact the real estate agent, the developer or the private person and begin negotiations.

18. New dwellings can be purchased at varying stages of completion. The websites classify dwellings using a color-coding scheme based on the level of completion as follows: (i) black – without interior walls, electricity installation, and communications; (ii) white – with

interior walls but without windows, communications; and (iii) green – requiring minor finishing such as painting or flooring. Since the stage of completion would affect the price, it should be noted that the price to be covered in the index should be the full price of a completed turn-key dwelling. Quality adjustment should take account of level of completion. Also, one must also be careful to understand whether appliances are included (such as kitchen appliances). This will also require that quality adjustment be made.

19. Existing dwellings can have different levels of quality. The websites also classify existing dwellings as newly renovated; partially renovated; and not renovated. However, the RPPI staff should further assess the usefulness of this information.

20. The RPPI should also assess the financing procedures for new dwellings that are financed through the developer, as these dwellings may feature a higher price that includes the developer's financing commission. Thus, the financing cost is included in the price. However, the financing should not be included in the index. Currently, there are no government subsidies on price of housing purchases; therefore, all prices are market prices.

21. The tax scheme must be further investigated and rules for inclusion or exclusion must be followed as possible. Value added tax should be included in the price while income taxes and transaction taxes should be excluded.

Recommendations:

- Collect additional information regarding the taxation scheme for real estate.
- Consider a quality adjustment according to the level of completion and whether appliances are included (such as kitchen appliances).
- Identify possible developer's financing commission included in the price of new dwellings.

C. Assessment of Potential Data Sources

22. Staff should be aware of the methodology for compiling the RPPI to enable them to assess the potential data sources. Therefore, the mission presented a general overview of all methodology aspects of the RPPI and the possible data sources.

23. The two main websites for property sales are possible data sources. Therefore, web scraping and automated data transmission are areas to explore. IT support at Geostat is good in terms of availability and technical skills. When using web scraping, Geostat should note the following:

- A dwelling can be advertised on the same site or on different sites by many agencies. Duplicates should be excluded from the dataset.
- A dwelling may enter the index the first month it is put on sale. If that dwelling is there in the following month with the same price, then it should be deleted as a duplicate entry.

It is important that if websites are to be used as a data source that Geostat inform the owners of the sites and request that data be transmitted to the agency as a first option, prior to web scrapping.

24. The most suitable data source may be the NAPR as it is mandatory to register all transactions in dwellings with the NAPR. However, the mission was not able to contact the agency but Geostat should consult the NAPR as soon as possible. The possibility of underreporting must be further investigated together with the tax scheme involved. However, the mission was advised that when the dwelling is bought directly from the developer the registered price is the final price as no transaction tax are due. When the property is purchased from the owner or an agency, there is a possibility that the price may be underreported.

25. The National Bank of Georgia compiles a real estate index that covers residential and commercial properties for two districts in Tbilisi with data from websites. Therefore, the geographic scope of this indicator is more modest than what Geostat is aiming. In addition, the available variables are confined to district and price and does not fit the purpose of RPPI. Nevertheless, the backwards data should be useful for consistency analysis and experiment the different methodology options especially where websites are to be used as main data source for the RPPI compilation.

26. The assessment of data quality must be made as soon as it is received. Data quality embraces reliability, timeliness and completeness. The coverage of the database must also be confirmed in terms of new dwellings; apartments and houses; and purchases financed with loans and cash. In addition, the meaning of the variables may need to be clarified on the source namely the size variables. Outliers and the missing values must be identified every month automatically. Finally, the data must be received in a timely manner, ideally with a monthly periodicity

Recommendations:

- Explore fitness for purpose and quality of web scrapping data from the two main websites.
- Obtain first set of data from NAPR and assess its quality.
- Select final data sources and write formal agreements.
- Assess the reliability by performing cross check between data sources.

D. Assessment of Data Quality

27. The assessment of data quality must be made as soon as the data are received. Some recommended steps should be taken as follows:

i. Assess the reliability by performing cross check between data sources.
ii. Confirm that the coverage is as expected in terms of new dwellings; apartments and houses; purchases financed with loans and cash.
iii. Select only the dwellings located in Tbilisi.

iv. Confirm the meaning of the variables/characteristics.
v. Check data for outliers, missing values.
vi. Make sure the data are received in a timely manner, ideally with monthly periodicity.

Stratification

28. The work on methodology/experimental indices will necessarily take some time as different options are explored. There is no straight "recipe" that can be applied to all countries and all types of data. Experiments must be made to find out the best performing method. Different options for stratification should be tried out bearing in mind that these are lower level sub-indices that must be robust, e.g., account with a significant number of observations.

29. An example of a possible stratification to be tested could be as follows:

RPPI
1.1. New dwellings
1.1.1. Apartments
1.1.1.1. Black
1.1.1.2. White
1.1.1.3. Green
1.1.2. Houses
1.1.1.1. Black
1.1.1.2. White
1.1.1.3. Green

Another possibility for stratification can be:

1. RPPI
1.1. New dwellings
1.1.1. Apartments
1.1.2.1. High level districts
1.1.2.2. Medium/Low level districts
1.1.3. Houses
1.1.1.4. High level districts
1.1.1.5. Medium/Low level districts

Two main steps are recommended on this stage:

- Check number of observations per strata over time and build some basic descriptive statistics (median, mean, standard deviation), by strata for different types of stratification:
- Compile index with the ratios of mean, median and geometric mean and compare results.

Hedonic methods

30. The mission conducted basic training on hedonic regression. Geostat should compile index series with the different approaches: time dummy; characteristics method; imputations approach; and with different model specifications and form: linear; log linear. Nevertheless, the

imputation approach is likely but not necessarily the most suitable. The main steps for this exercise are as follows: (i) run the OLS regression; (ii) test the significance of the variables; and (iii) multicollinearity (no bedrooms and size) and specification of the model. The lower level of the first stratification example can also be taken in a dummy variable when using hedonics.

Recommendations:

- Define the variables.
- Experiment with different options for stratification.
- Compile index series with the different approaches: time dummy; characteristics method; imputations approach. Assess the results obtained from different model specifications.
- Run the OLS for different regression forms: linear; log linear.
- If the hedonics method is not feasible, compile an index series with the ratios of mean, median and geometric mean and compare the results.

E. RPPI Methodology Options

31. As a start, Geostat may compile the RPPI for the capital city only to cover all transactions in new apartments and houses. The capital city should be the starting point as it accounts for the largest number of transactions. Town houses are very rare and no other types of dwellings were identified. In the villages, self-builders can also be found but these will be ruled out for the moment since only Tbilisi will be in scope. The coverage of existing dwellings will be postponed due to the higher complexity on the treatment of this type of dwellings. The coverage can be expanded to existing dwellings at later stage, when the methodology for new dwellings is stabilized and after a production system is in place. It is expected that, by then, staff would have obtained more experience and new skills on the specifics of real estate indices.

32. Geostat should be able to compile the RPPI on a quarterly basis and disseminate the first index in mid-May 2021, for the reference period being the first quarter of 2021. The RPPI will be developed by the same staff responsible for compiling the CPI. Currently, five persons are assigned to the CPI and, based on the production schedule, they should be able to allocate sufficient time to work on a quarterly RPPI. The CPI is released on the third day of the month and resources are normally fully allocated to its compilation from the twenty-first day of the previous month. Price collection for the CPI takes place during the tenth and twentieth day and part of staff time is taking up by this process. Therefore, resources can be assigned to the RPPI from the fourth to the ninth of the month and partially allocated up to the twentieth.

33. Geostat should not consider including the RPPI in the CPI in the short term. In addition to the difference in periodicity, the CPI is an established indicator and its quality can be jeopardized with the inclusion of a new index that would necessarily be of lower quality in the first years. In any case for inclusion in the CPI, the net approach is required; that is, only new dwellings would be covered.

34. The methodology should be developed during an experimental period and for that, back data are needed. Geostat should aim to collect three years of back data, and start as soon as possible with a monthly automated transmission. Ideally, the transmission will be on the third day of each month to be in line with the CPI production routines. The Staff in charge of RPPI production should have direct contact with the staff responsible for the data transmission to address any data issues in reasonable time during the production phase. This relation should be built from the start of the project.

Recommendations:

- Compile an experimental index covering new dwellings for the previous three-year period.
- Release first index mid-May 2021 for the reference period ending the first quarter of 2021.

PRODUCER PRICE INDEX

A. Scope and Coverage

35. Geostat publishes monthly output PPIs for total production, production for domestic sale, and exports. Basic prices excluding taxes, transport fees, and trade margins are collected at the point of ex-producer (factory gate). This is consistent with recommended practices for PPI output indices.

36. The output indexes are currently used as the preferred data source for deflating nominal value added for the covered activities in the national accounts. They are also used for indexation of contracts in the public and private sectors.

37. The PPI covers products from mining and quarrying; manufactured products; and electricity energy, gas, steam, and hot water (CPA 1996 sections C, D, and E). A price index for material inputs to construction is also produced, though there is no PPI for construction activity output. Geostat uses the CPA 1996 classification for the PPI and *NACE Rev. 2* for national accounts and business statistics. Currently, national accounts are in the process of transition to the NACE Rev.2. Thus, data coherence is expected to improve as the PPI transition to CPA version 2.1, which better concords with *NACE Rev. 2*.

38. Geostat expanded coverage of the PPI to cover some services with the development of an index for freight transport in 2008. This index is not included in the aggregate PPI for total production and a single PPI for total production of freight transport services is published. Geostat also produces a price index for material inputs to construction.

39. The PPI covers approximately 25 percent of in-scope output.[2] With services activities excluding construction comprising approximately 50 percent of in-scope output as of 2017,[3] the relative importance of measuring services inflation from the producer's perspective has increased. The largest contributor to the output of services is wholesale and retail trade. The data collection cost of expanding coverage to wholesale and retail trade is likely to be very large, as approximately 50 percent of active classified business units engage in this activity.[4]

40. The price changes for the other activities that may be considered for the index, such as passenger transport and hotels and restaurants are likely to follow the CPI closely. For these activities, Geostat may consider producing output-weighted PPIs using CPI prices excluding VAT. This is a low-cost approach to expanding PPI coverage of services. In addition, the mission recommends that coverage be expanded to CPA 2.1 codes 52.10, Warehousing and

[2] This was approximated by evaluating gross output at current prices for 45 activities and classifying activities by households and public administration as out-of-scope.

[3] Ibid.

[4] Geostat business register data.

storage services; 69, Telecommunications services; and 79.1, Travel agency and tour operator services. Adding an index for Warehousing and storage would allow Geostat to build on the success with measuring the related Freight transport services. An index for telecommunications will facilitate more accurate deflation of nominal value added, particularly with respect to sales of telecommunications services to enterprises that are not covered in the CPI. Measurement of the large and growing tourism sector will be improved with an PPI for travel and tour services. These three activities will together increase coverage of in-scope output by five percent.

41. The experts would assist in identifying the types of services offered, key price determining characteristics, types of prices charged, and industry record keeping practices. It would also be useful to review literature for pricing specified activity, including the OECD/SPPI manual guidelines and documents on the website of the Voorburg Group for Services Statistics.

42. Including additional services activities in the index could be undertaken using a phased implementation approach as follows:

- Phase I-January 2019: pilot survey for warehousing and storage;
- Phase II-July 2019: pilot survey for telecommunications;
- Phase III-January 2020: pilot survey for travel agency and tour operators.

The detailed actions to be undertaken in each of these phases are presented in the list of recommendations (appendix).
Additional field data collectors and head office staff may be needed to execute this expansion.

Recommendations:

- Update the classification basis from CPA 1996 to CPA version 2.1 to align with national accounts and business statistics. This may result in discontinuity of certain indices and partial coverage of new products.
- Expand PPI coverage to CPA 2.1 codes 52.10, Warehousing and storage services; 69, Telecommunications services; and 79.1, Travel agency and tour operator services.

B. Sampling, Weighting, and Index Calculation

The PPI is a sub-sample of the Business Statistics program, which is drawn from the business register. The register classifies entities based on their principal activity, defined as the activity that is the single largest contributor to turnover. The statistical unit is a kind-of-activity unit (KAU), representing all production output of the enterprise within a NACE kind of activity code. Geostat is currently unable to identify the principal activity of 26.4 percent of active register units.[5] Data on business register is mainly based on the administrative data of National Agency of Public Registry (NAPR) where some information regarding type of economic activity is missing. However, in order to identify missing values several approaches are used, including CATI

[5] Ibid.

(Computer Assisted Telephone Interviewing) and different business surveys (quarterly and annual). Therefore, some of the units with unidentified types of economic activity may still be involved in business statistics survey.

43. PPI staff perform a series of steps to derive the lists of domestic producers and exporters of each covered product ordered by their value of sales. These include extensive sampling frame refinement to identify coding and classification errors, converting harmonized codes to CPA codes, and applying currency conversions to the merchandise trade statistics.

44. Product samples are designed to achieve coverage of 80 percent of production. This is achieved through cutoff, systematic, and/or judgmental selection. Product output is frequently concentrated amongst a small number of enterprises.

45. Aggregate weights at the CPA 4-digit level are taken from national accounts, which represents total output, including the output of unregistered units and households. These weights are then allocated to more detailed levels based on production value of the registered units as measured by the Business Statistics program. The methodology was recently improved to use output rather than turnover for weighting purposes. Indices are calculated using a modified Laspeyres formula, with weights and samples updated annually based on the results of the Business Statistics survey. These updates are based on t-2 period data.

C. Price Collection and Data Editing

46. Field data collectors are assigned to support PPI and related price index programs (export prices, import prices, and construction costs). Field data collectors are responsible for approximately 150 KAU each. Geostat employed 26 field data collectors, though not all of them supported PPI and related programs in 2018. An official letter is provided to notify responding units that they were selected in a PPI sample. They are instructed to access the website for data reporting. They then provide specifications, prices, and turnover shares for up to four product varieties. Without direct guidance and assistance from field data collectors, respondents may not correctly select representative product varieties or sufficiently specify product features.

47. A standard questionnaire is used for all products. Activity-specific questionnaires would better facilitate specification of the product features and transaction terms needed for constant quality pricing.[6] Depending on variability of production within a CPA, direct questionnaires may be developed at the 2, 3, 4, 5, or 6-digit level.

48. Respondents are instructed to provide the average price received for all sales of the product in the most recently completed month. The questionnaire does not, however, instruct respondents to specify how the average price was calculated. The components of the average price calculation, typically total turnover generated by product sales divided by number of units

[6] See *Producer Price Index Manual: Theory and Practice* Chapter 6, section D for best practices on product specification.

transacted, should be specified when possible. This will allow staff to monitor reporting for price changes caused by changes in customer mix that will need to be removed or adjusted, cases where product substitution may be required due to lack of sufficient sales, and errors in price calculation.

49. The questionnaire instructs the respondent to describe the reasons for any price changes as they are reported. Field data collectors or head office staff may contact the respondent to gather additional information. The base price is displayed in the collection instrument, though the respondent is not able to edit it.

50. Field data collectors approve all price submissions made by responding enterprises each month and notify non-responding enterprises of their mandatory obligation to provide prices. Efficiencies could be gained if cases were flagged for field data collector review only if the magnitude of price change was over or below established tolerances. Tolerances may need to be set independently for each product group.[7] Systematic analysis is conducted for tabulated data prior to release.

Recommendations:

- Assign data collectors to administer activity-specific questionnaires to select, weight, and carefully specify newly selected transactions. If resources are limited, this may be introduced only for larger respondents and those sampled for complex areas, such as services.
- Develop activity-specific questionnaires that specify product characteristics; price and quality determining features; and transaction terms to be maintained for constant quality pricing.
- Remove the base price from the data collection instrument as its value may change based on quality adjustment and will therefore not provide meaningful information to the respondent. Display of base prices may also encourage respondents to anchor their current period prices in relation to the historical base price.
- Consider adding fields to the data collection instrument for respondents to indicate total turnover collected and units transacted when calculating product average prices.
- Consider using email to inform respondents when it is time to record their monthly price updates in the data collection website. Proper protocols to maintain data confidentiality such as secure email servers should be established if this option is used.
- Introduce referral flags based on price change tolerances to limit the amount of manual data review assigned to the Field data collectors. The tolerances should be set so that any changes outside the boundaries of expectation are flagged.

D. Dissemination and Stakeholder Relations

51. The PPI is published monthly, 20 days after the reference month, therefore meeting the SDDS requirements. Time series at the aggregate and 19 sub-group levels are compiled

[7] See *IMF, Producer Price Index Manual: Theory and Practice, 2004* chapter 6, section F for best practices on establishing tolerances for price verification.

from individual 12-month annual PPI series. The PPI is internally consistent and longer time-series are derived by chain linking annual index series together. The PPI is final upon its first release. Revisions are made only in the rare cases when significant errors are discovered after publication. The Geostat website is relatively informative and user friendly. Ease of user analysis would be improved if one-month and twelve-month percentage changes were provided for each month for all series. Consistent long index time series are difficult to locate since they are not disseminated together with the monthly data.

52. Clear descriptions of program methodology are provided in both Georgian and English. The Geostat website includes central telephone number and email address for users to contact.

53. Communication with key PPI stakeholders occurs on an as needed basis. Relations with data users could be improved by establishing scheduled recurring interactions. This may be achieved through establishing advisory groups or scheduling regular meetings with key customers.

Recommendations:

- Add one-month and twelve-month percentage changes for each data series both as part of the PPI data release and in the interactive data retrieval tool on the Geostat website.
- Establish a users' advisory group for price statistics that meets on a regular basis and include all types of users to discuss existing data programs, plans for improvement, and to obtain user feedback on current and planned data programs. Representatives from academic institutions, the business community, and governmental users such as national accounts and the Central Bank would be ideal.

E. Recommendations—RPPI

Priority	Action / Milestone	Risk Assumptions / Verifiable Indicators	Target Completion Date	Actual Completion Date	Implement. Status
Outcome: **Assessment of potential data sources**					
H	First obtain data from NAPR and assess its quality.	Data should be available and evaluated.	September 2018		
H	Assess the reliability by performing crosscheck between data sources.	Crosschecking conducted.	September 2018		

Priority	Action / Milestone	Risk Assumptions / Verifiable Indicators	Target Completion Date	Actual Completion Date	Implement. Status
H	Select final data sources and write formal agreements.	Agencies agree to provide data in the form and timeliness required.	February 2019		
Outcome: Quality adjustments methods					
H	Design a clear definition of the variables.	List of variables with definition.	November 2018		
H	Use expertise from real estate agents and developers.	Meetings with experts.	November 2018		
H	Experiment with different options for stratification.	Results from experiments should be available.	September 2019		
H	Compile index series with the different hedonic methods.	Results from experiments should be available.	November 2019		
H	Assess the results obtained from different model specifications.	Results from experiments should be available.	January 2020		
H	Run the OLS for different regression forms: liner; log linear.	Results from experiments should be available.	January 2020		
L	If hedonics methods are not feasible compile an index series with the ratios of mean.	Results from experiments should be available.	May 2020		
Outcome: **Main methodology options**					

Priority	Action / Milestone	Risk Assumptions / Verifiable Indicators	Target Completion Date	Actual Completion Date	Implement. Status
H	Compile an experimental index covering new dwellings for the last three years.	A series is available.	September 2020		
H	Release first index mid-May 2021.	The RPPI is disseminated.	May 2021		

F. Recommendations—PPI

Priority	Action / Milestone	Risk Assumptions/ Verifiable Indicators	Target Completion Date	Actual Completion Date	Implement. Status
Outcome: Collect prices for new services PPIs.					
H	Develop initiation questionnaire tailored to specify services for the product area.	Phase 1 completion – October 2018 Phase 2 completion – April 2019 Phase 3 completion – October 2019	October 2019		
M	Train field data collectors to administer initiation questionnaire to enterprises.	Phase 1 completion – December 2018 Phase 2 completion – June 2019 Phase 3 completion – December 2019	December 2019		
M	Assign individual field data collectors to assist each specified enterprise.	Phase 1 completion – December 2018 Phase 2 completion – June 2019 Phase 3 completion – December 2019	December 2019		
H	Initiate pilot data collection.	Phase 1 completion – January 2019 Phase 2 completion – July 2019 Phase 3 completion – January 2020	January 2020		

Priority	Action / Milestone	Risk Assumptions/ Verifiable Indicators	Target Completion Date	Actual Completion Date	Implement. Status
M	Refine initiation questionnaire based on experience with pilot survey, if needed.	Phase 1 completion – October 2019 Phase 2 completion – April 2020 Phase 3 completion – October 2020	October 2020		
H	Initiate production data collection.	Phase 1 completion – January 2020 Phase 2 completion – July 2020 Phase 3 completion – January 2021	January 2021		
Outcome: Create sample and weighting pattern for new services PPIs.					
H	Identify sample frame and measure of size that determines enterprise selection.	Phase 1 completion – September 2018 Phase 2 completion – March 2019 Phase 3 completion – September 2019	September 2019		
H	Select the sample of enterprises.	Phase 1 completion – October 2018 Phase 2 completion – April 2019 Phase 3 completion – October 2019	October 2019		
H	Calculate weights for upper-level indices based on net output	Phase 1 completion – December 2018	December 2019		

Priority	Action / Milestone	Risk Assumptions/ Verifiable Indicators	Target Completion Date	Actual Completion Date	Implement. Status
	of associated NACE activity group.	Phase 2 completion – June 2019 Phase 3 completion – December 2019			
H	Calculate weights for elementary aggregates based on turnover data collected from enterprises.	Phase 1 completion – January 2019 Phase 2 completion – July 2019 Phase 3 completion – January 2020	January 2020		
Outcome: Implement data editing and quality adjustment strategies for new services PPIs.					
M	Establish tolerances for referring price reports for review and editing.	Phase 1 completion – January 2019 Phase 2 completion – July 2019 Phase 3 completion – January 2020	January 2020		
H	Identify strategy for when and how quality adjustment will be applied.	Phase 1 completion – January 2019 Phase 2 completion – July 2019 Phase 3 completion – January 2020	January 2020		
Outcome: Disseminate new services PPIs.					
H	Identify the upper-level indices intended for dissemination. Consider aggregations of	Phase 1 completion – October 2018 Phase 2 completion – April 2019	October 2018		

Priority	Action / Milestone	Risk Assumptions/ Verifiable Indicators	Target Completion Date	Actual Completion Date	Implement. Status
	homogenous activity that may improve missing price imputation in establishing the publication structure.	Phase 3 completion – October 2019			
M	Review the upper-level indices intended for dissemination based on amount and quality of prices collected in the pilot period. Adjust the publication structure as needed.	Phase 1 completion – October 2019 Phase 2 completion – April 2020 Phase 3 completion – October 2020	October 2020		
H	Design statistical release, including documentation of methods and metadata. Determine if data calculated during the pilot period meets quality criteria for statistical release.	Phase 1 completion – December 2019 Phase 2 completion – June 2020 Phase 3 completion – December 2020	December 2020		
H	Publish the index.	Phase 1 completion - February 2020 Phase 2 completion – August 2020	February 2021		

Priority	Action / Milestone	Risk Assumptions/ Verifiable Indicators	Target Completion Date	Actual Completion Date	Implement. Status
		Phase 3 completion – February 2021			
Outcome: Improve methods and practices for PPI for industrial products.					
H	Update the classification basis to CPA 2.1.		January 2020		
H	Apply adjustments factors calculated from national accounts supply-use tables to exclude the effect of inter-sectoral transactions on aggregate PPIs.		January 2019		
H	Modify data reporting website to exclude base prices.		January 2019		
H	Develop activity-specific questionnaires for existing PPIs.		January 2020		
H	Create referral flags for review and editing of price changes based on expected tolerances.		January 2019		
H	Add 1-month and 12-month percentage changes to PPI news releases		January 2020		

Priority	Action / Milestone	Risk Assumptions/ Verifiable Indicators	Target Completion Date	Actual Completion Date	Implement. Status
	and the Geostat website.				
H	Establish a users advisory group for prices with regular scheduled meetings.		January 2019		

G. Officials Met During the Mission

Name	Institution	E-mail Address
Tengiz Tsekvava	Deputy Executive Director, Geostat	TTsekvava@geostat.ge
Giorgi Tetrauli	Head of Price Statistics Division, Geostat	gtetrauli@geostat.ge
Levan Karsaulidze	Head of National Accounts Division, Geostat	lkarsaulidze@geostat.ge
Khatuna Aptsiauri	Head of Consumer Price Statistics Sub-Division, Geostat	khaptsiauri@geostat.ge
Julieta Beraia	Chief Specialist, Consumer Price Statistics Sub-Division, Geostat	jberaia@geostat.ge
Maia Chelidze	Senior Specialist, Consumer Price Statistics Sub-Division, Geostat	mchelidze@geostat.ge
Nona Tsiklauri	Senior Specialist, Consumer Price Statistics Sub-Division, Geostat	ntsiklauri@geostat.ge
Revaz Maisuradze	Senior Specialist, Consumer Price Statistics Sub-Division, Geostat	rmaisuradze@geostat.ge
Tsitsino Lobjanidze	Head of Producer Price Statistics Sub-Division, Geostat	clobjanidze@geostat.ge
Gela Darjania	Chief Specialist, Producer Price Statistics Sub-Division, Geostat	gdarjania@geostat.ge
Giorgi Melikov	Senior Specialist, Producer Price Statistics Sub-Division, Geostat	gmelikov@geostat.ge
Megi Gogoberishvili	Senior Specialist, Producer Price Statistics Sub-Division, Geostat	mgogoberishvili@geostat.ge
Nino Shilakadze	Senior Specialist, Producer Price Statistics Sub-Division, Geostat	nshilakadze@geostat.ge