

**To: All banks, branches of foreign institutions, controlling companies, eligible institutions and auditors of banks or controlling companies**

**Directive issued in terms of section 6(6) of the Banks Act 94 of 1990**

**Prudent Valuation Adjustments Framework**

### **Executive summary**

**Globally, the banking industry is undergoing a process of derivative reform, which is likely to alter the composition and risks of the fair-valued portfolio of most banks.**

**The revised Basel II market risk framework requires that unearned credit spreads, closeout uncertainty, operational risks, early termination, investing and funding costs, future administrative costs and, where appropriate, model risk valuation adjustments or reserves be formally considered.**

**In this regard, a Prudent Valuation Adjustment (PVA) must be calculated on all positions, in both the trading book and the banking book. For transactions where changes to fair values have a partial or zero impact on common equity tier (CET) 1 capital, their values must only be considered to the extent of the impact of the relevant fair value adjustment on CET 1 capital.**

## **1. Introduction**

1.1 Regulation 39(13)(c) of the Regulations relating to Banks (Regulations), requires all banks, branches of foreign institutions and controlling companies (hereinafter collectively referred to as 'banks') that invest or trade in instruments, contracts or positions that are measured at fair value to implement robust governance structures and control processes as part of their risk-management framework for the prudent valuation of the said instruments, contracts or positions, which structures, control processes and risk-management framework shall include the key elements specified below:

- a. structures, processes, systems and controls;
- b. valuation methodologies; and
- c. valuation adjustment.

- 1.2 Due to the uncertainty associated with liquidity in markets, instruments or products accounted for at fair value, that may result in a bank being unable to sell or hedge the said instruments, products or positions in a desired short period of time, a bank has to establish and maintain processes and procedures for considering relevant valuation adjustments as part of the bank's risk management framework and mark-to-market or mark-to-model procedures.
- 1.3 PVAs are required as a result of fair value calculated in accordance with the applicable financial reporting framework not being sufficiently prudent. Each PVA shall be calculated as the excess of valuation adjustments required to achieve the identified prudent value over and above any adjustments applied under the applicable financial reporting framework and recognised in CET1.
- 1.4 In terms of Directive 1 of 2019, issued by the Prudential Authority (PA), banks are required to disclose in Template PV1, on an annual basis, effective for the financial years ending on or after 31 December 2019, the PVAs for unearned credit spreads, closeout costs, operational risks, early termination, investing and funding costs, future administrative costs and model risk.
- 1.5 The purpose of this Directive is to ensure banks' continued compliance with the requirements set out in Directive 1 of 2019, which focuses on implementing regulation 39(13)(c) of the Regulations for the calculation of PVAs, to provide clarity on the provisions of Directive 4 of 2015 and the implementation of the "Pillar 3 disclosure requirements – consolidated and enhanced framework" standard in so far as it relates to Template PV1. Banks are also advised that the PA will continue to monitor international developments on the implementation of the Basel III framework.

## **2. Directive**

In order to ensure that the legal framework for the regulation and supervision of banks in South Africa remains relevant and current, based upon the aforesaid, and in accordance with the provisions of section 6(6) of the Banks Act 94 of 1990, banks are hereby directed as follows:

- 2.1 Banks have to consider all PVAs individually (that is, regardless of the ability to associate them with a single PVA group or category). However, banks may estimate PVAs in line with internal governance models. Banks must, at a minimum, consider the following PVAs:
  - 2.1.1 Investing and funding costs – PVA to reflect the valuation uncertainty in the funding costs that would be factored into the exit price for a position or portfolio. It includes funding valuation adjustments on derivatives exposures.
  - 2.1.2 Close-out uncertainty, of which:
    - a. Mid-market value – PVA required to take into account uncertainty surrounding the application of an average between the bid prices and ask prices.
    - b. Close-out cost – PVA required to take account of the valuation uncertainty to adjust for the fact that the position level valuations calculated do not reflect an exit price for the position or portfolio (for example, where such valuations are calibrated to a mid-market price).

- c. Concentration – PVA over and above mid-market price and closeout costs that would be required to get to a prudent exit price for positions that are larger than the size of positions for which the valuation has been calculated (that is, cases where the aggregate position held by the institution is larger than normal traded volume or larger than the position sizes on which observable quotes or trades that are used to calibrate the price or inputs used by the core valuation model are based).
- 2.1.3 Unearned credit spreads – PVA to consider the valuation uncertainty in the adjustment necessary to include the current value of expected losses due to counterparty default on derivative positions, including the valuation uncertainty on credit valuation adjustments (CVAs).
- 2.1.4 Early termination – PVA to take into account the potential losses arising from contractual or non-contractual early terminations of customer trades that are not reflected in the valuation under normal market conditions. This PVA is to be assessed under normal market conditions, in the ordinary course of business, taking into account the likelihood of early termination given prior early terminations by clients. Furthermore, this must only be included as a PVA where the cost of early termination is not passed on to the client.
- 2.1.5 Model risk – PVA to take into account valuation model risk which arises due to:
- a. the potential existence of a range of different models or model calibrations;
  - b. the lack of a firm exit price for the specific product being valued;
  - c. the use of an incorrect valuation methodology;
  - d. the risk of using unobservable and possibly incorrect calibration parameters;
  - or
  - e. the fact that market or product factors are not captured by the core valuation model.
- 2.1.6 Operational risk PVA to take into account the potential losses that may be incurred as a result of the operational risk related to valuation processes.
- 2.1.7 Future administrative costs – PVA to take into account the administrative costs and future hedging costs over the expected life of the exposures for which a direct exit price is not applied for the closeout costs. This valuation adjustment has to include the operational costs arising from hedging, administration and settlement of contracts in the portfolio. The future administrative costs are incurred by the portfolio or position, but are not reflected in the core valuation model or the prices used to calibrate inputs to that model.
- 2.1.8 Other – Other PVAs which are required to take into account factors that will influence the exit price, but which do not fall in any of the categories specified above. These have to be described by banks in the narrative commentary that supports the disclosure.
- 2.1.9 Debit Valuation Adjustments (DVA) are excluded from the individual PVAs that the banks are required to consider.

2.2 For the purposes of this Directive, banks must apply the definitions set out in paragraph 3 below.

2.3 For purposes of determining the individual PVA, banks must follow the requirements provided in Annexure A to this Directive.

### **3. Definitions**

3.1 For the purposes of this Directive, the following definitions shall apply:

3.1.1 'PVA' means the excess of valuation adjustments required to achieve the identified prudent value over and above any adjustments applied under the applicable financial reporting framework.

3.1.2 'Valuation position' means a financial instrument, commodity, portfolio of financial instruments or commodities held in both trading and non-trading books, which are measured at fair value.

3.1.3 'Valuation input' means a market observable or non-observable parameter or matrix of parameters that influences the fair value of a valuation position.

3.1.4 'Valuation exposure' means the amount of a valuation position which is sensitive to the movement in a valuation input.

### **4. Reporting and disclosure**

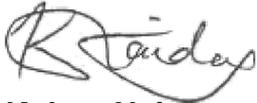
4.1 The aggregate PVA must be reported in line item 203 of the form BA 700.

4.2 Banks must estimate their PVAs at least on a quarterly basis. The PVA must be disclosed annually, in accordance with Directive 1 of 2019. Rows which are not applicable to the reporting bank must be completed as zero ('0') and the reason why they are not applicable must be explained in the accompanying narrative.

4.3 The PVAs must be estimated at bank solo, bank consolidated, controlling company consolidated and branches as well as subsidiaries of local banks. The rationale behind estimating at consolidated level is to minimise any arbitrage of the framework through the use of complex organisation structures, which could be cross jurisdictional.

**5. Acknowledgement of Receipt**

- 5.1 Kindly ensure that a copy of this Directive is made available to your institution's external auditors. The attached acknowledgement of receipt duly completed and signed by both the chief executive officer of the institution and the said auditors should be returned to the PA at the earliest convenience of the aforementioned signatories.



**Kuben Naidoo**  
**Deputy Governor and CEO: Prudential Authority**

**Date:** 2020-09-02

Encl. 1

The previous directive issued was Directive 4/2020 dated 27 August 2020.

## **Overview of the PVA methodology**

In order to ensure that the prudent valuation of their fair valued positions achieves an appropriate degree of certainty, banks must calculate PVAs necessary to adjust fair values to prudent values and must calculate these PVAs in accordance with the methods specified in this Annexure A.

### **1. Sources of market data**

- 1.1 Where banks calculate PVAs based on market data, they must consider the same range of market data used in the independent price verification (IPV) process, subject to the adjustments described in this Directive.
- 1.2 For the purposes of this Directive, banks must consider a full range of available and reliable market data sources to determine a prudent value, including each of the following, where relevant:
  - a. exchange prices in a liquid market;
  - b. trades in similar instruments, either from the bank's own records or trades from across the markets;
  - c. tradable quotes from brokers and other market participants;
  - d. consensus service data;
  - e. indicative broker quotes; and
  - f. counterparty collateral valuations.
- 1.3 Where banks use an internal expert-based approach referred to in this Directive, alternative methods and sources of information must be considered, including each of the following, where applicable:
  - a. the use of proxy data based on similar instruments for which sufficient data is available;
  - b. application of prudential shifts to valuation inputs; and
  - c. identification of natural bounds to the value of an instrument.

### **2. Materiality threshold**

- 2.1 The PA has deemed it necessary to set a materiality threshold to determine which methodology the banks must employ in calculating the PVAs. As a result, banks must consider the following materiality threshold in their process of calculating PVAs.
  - 2.1.1 Materiality threshold to determine which banks are allowed to use the simplified approach
    - 2.1.1.1 The simplified approach can only be adopted where the total adjustments to fair values that affect CET 1 as a percentage of the sum of the absolute value of fair-valued assets and liabilities (excluding the Debit Valuation Adjustments (DVA)) is below 1%.

- 2.1.1.2 Exactly matching, offsetting fair valued assets and liabilities are excluded from the calculation envisaged in paragraph 2.1.1.1. For fair-valued assets and liabilities whose adjustments to fair values has a partial or zero impact on CET 1 capital, their values must only be included to the extent of the impact of the relevant fair valuation adjustment on CET 1 capital.
- 2.1.1.3 This materiality threshold must be applied at the following levels: bank solo, bank consolidated, controlling company consolidated, foreign branch and foreign subsidiary of a bank incorporated in the Republic. Where the threshold is breached at controlling company level, the core approach must be applied at all levels in the banking group.

### **3. Determination of PVAs under the simplified approach**

- 3.1 Banks must calculate the PVA under the simplified approach as 0.1% of the sum of absolute value of fair-valued assets and liabilities which are included in the materiality threshold calculation in paragraph 2.1.1 above.
- 3.2 For the purposes of this Directive, the aggregate PVA must be the PVA resulting from the calculation in paragraph 3.1 above.
- 3.3 Furthermore, for the purpose of Pillar 3 disclosure requirements and Template PV1, the aggregate PVA from the calculation in paragraph 3.1 must be disclosed under the line item 'Other' in the 'Total' column. The PVA must be split between banking book and trading book.

### **4. Determination of PVAs under the core approach**

- 4.1 Overview of the core approach
- 4.1.1 Banks must calculate PVAs under the core approach by applying the following two-step approach:
- a. calculate PVAs for each of the categories described in regulation 39(13)(c)(i)(D) of the Regulations, in accordance with paragraph 4.1.2 below; and
  - b. sum the amounts resulting from step (a) above for each category level PVA to provide the aggregate PVA.
- 4.1.2 For the purposes of point (a) of paragraph 4.1.1, banks must calculate category level PVAs according to paragraph 4.3 to 4.11 of this Annexure A.
- 4.2 General provisions for the calculations of PVAs under the core approach
- 4.2.1 For fair-valued assets and liabilities for which a change in accounting valuation has a partial or zero impact on CET1 capital, PVAs must only be calculated based on the proportion of the accounting valuation change that impacts CET1 capital. This excludes DVA that was already deducted from CET1.
- 4.2.2 In relation to the category level PVAs described in paragraphs 4.8 to 4.11, banks must aim to achieve a level of certainty in the prudent value that is equivalent to that set out in paragraphs 4.3 to 4.7 of this Annexure A.

4.2.3 PVAs must be considered to be the excess of valuation adjustments required to achieve the identified prudent value, over any adjustment applied in the institution's fair value that can be identified as addressing the same source of valuation uncertainty as the PVA. Where an adjustment applied in the institution's fair value cannot be identified as addressing a specific PVA category at the level at which the relevant PVAs are calculated, that adjustment must not be included in the calculation of PVAs.

4.2.4 PVAs must always be positive, including at valuation exposure level, category level, both pre- and post-aggregation.

### **4.3 Calculation of mid-market value PVA**

4.3.1 Mid-market value PVAs must be calculated at valuation exposure level (individual mid-market value PVAs).

4.3.2 The mid-market value PVA must only be assessed to have zero value where both of the following conditions are met:

- a. the bank has firm evidence of a tradable price for a valuation exposure or a price can be determined from reliable data based on a liquid market; and
- b. the sources of market data do not indicate any material valuation uncertainty.

4.3.3 Where a valuation exposure cannot be shown to have a zero PVA, banks must use market data sources when assessing the mid-market value PVA. In this case, the calculation of the mid-market value PVA must be performed as described in paragraphs 4.3.4 and 4.3.5 of this Annexure A.

4.3.4 Banks must calculate PVAs on valuation exposures related to each valuation input used in the relevant valuation model. The granularity at which those PVAs must be assessed must be determined as follows:

- a. For non-derivative valuation positions, or derivative positions which are marked to market, the valuation input must be one of the following:
  - i. decomposed into more than one valuation input, such that all inputs required to calculate an exit price for the position are treated separately; or
  - ii. the price of the instrument.

4.3.5 Mid-market value PVAs must be determined as follows:

- (a) Where sufficient data exists to construct a range of plausible values for a valuation input:
  - i For a valuation input where the range of plausible values is based on exit prices, banks must estimate a point within the range where they are 90% confident they could exit the valuation exposure at that price or better.
  - ii For a valuation input where the range of plausible values is created from mid prices, banks must estimate a point within the range where they are 90% confident that the mid value they could achieve in exiting the valuation exposure would be at that price or better.

- (b) Where insufficient data exists to construct a plausible range of values for a valuation input, banks must use an internal expert-based approach using qualitative and quantitative information available to achieve a level of certainty in the prudent value of the valuation input that is equivalent to that envisaged in (a) above. Banks must notify the PA of the valuation exposures for which this approach is applied, and the methodology used to determine the PVA.
- (c) Banks must calculate the mid-market value PVA based on one of the following approaches:
  - i apply the difference between the valuation input values estimated according to either subparagraph (a) or (b), and the valuation input values used for calculating fair value to the valuation exposure of each valuation position; or
  - ii combine the valuation input values estimated according to either subparagraph (a) or (b) and revalue valuation positions based on those values. Institutions must then take the difference between the revalued positions and fair-valued positions.

4.3.6 Banks must calculate the total category level PVA for mid-market value by applying to individual mid-market value PVAs the formulae for either Method 1 or Method 2 as referred to in Exhibit 1.

#### 4.4 Calculation of close-out cost PVA

4.4.1 Close-out cost PVAs must be calculated at valuation exposure level (individual close-out cost PVAs).

4.4.2 When the bank has calculated a mid-market value PVA for a valuation exposure based on an exit price, the close-out cost PVA may be assessed to have zero value because it is deemed that the determination of the exit price has taken into account the close-out costs.

4.4.3 The close-out cost PVA may be assessed to have zero value, on the condition that the bank provides evidence that it is 90% confident that sufficient liquidity exists to support the exit of the related valuation exposures at mid-price.

4.4.4 Where a valuation exposure cannot be shown to have a zero close-out cost PVA, banks must use the market data sources. In this case, the calculation of the close-out costs PVA must be performed as described in paragraphs 4.4.5 and 4.4.6 of this Annexure A.

4.4.5 Banks must calculate close-out costs PVAs on valuation exposures related to each valuation input used in the relevant valuation model. The granularity at which those close-out cost PVAs must be assessed must be determined as follows:

- (a) For non-derivative valuation positions or derivative positions which are marked to market, the valuation input must be one of the following:
  - i decomposed into more than one valuation inputs, such that all inputs required to calculate an exit price for the position are treated separately; or
  - ii the price of the instrument.

- 4.4.6 Close-out cost PVAs must be determined as follows:
- a. Where sufficient data exists to construct a range of plausible bid-offer spreads for a valuation input, banks must estimate a point within the range where they are 90% confident that the spread they could achieve in exiting the valuation exposure would be at that price or better.
  - b. Where insufficient data exists to construct a plausible range of bid-offer spreads, banks must use an internal expert-based approach using qualitative and quantitative information available to achieve a level of certainty in the prudent value that is equivalent to that targeted where a range of plausible values is available. Banks must notify the PA of the valuation exposures for which this approach is applied, and the methodology used to determine the PVA.
  - c. Banks must calculate the close-out cost PVA by applying 50% of the estimated bid-offer spread calculated in accordance with either subparagraph (a) or (b) to the valuation exposures related to the valuation inputs defined in paragraph 4.4.5 of this Annexure A.
- 4.4.7 Banks must calculate the total category level PVA for close-out cost by applying to the individual close-out cost PVAs the formulae for either Method 1 or Method 2 as referred to in Exhibit 1.
- 4.5 Calculation of model risk PVA
- 4.5.1 Where appropriate, banks must estimate a model risk PVA for each valuation model (individual model risk PVA) by considering valuation model risk which arises due to the potential existence of a range of different models or model calibrations, which are used by market participants, and the lack of a firm exit price for the specific product being valued. Banks must not consider valuation model risk which arises due to calibrations from market derived parameters – which must be captured according to the methodology for the calculation of the mid-market value PVA.
- 4.5.2 The model risk PVA must be calculated using one of the following approaches defined in paragraphs 4.5.3 and 4.5.4 below.
- 4.5.3 Where possible, banks must calculate the model risk PVA by determining a range of plausible valuations produced from alternative appropriate modelling and calibration approaches. In this case, banks must estimate a point within the resulting range of valuations where they are 90% confident they could exit the valuation exposure at that price or better.
- 4.5.4 Where banks are unable to use the approach defined in paragraph 4.5.3 above, they must apply an internal expert-based approach to estimate the model risk PVA. The internal expert-based approach must consider all of the following:
- a. complexity of products relevant to the model;
  - b. diversity of possible mathematical approaches and model parameters, where those model parameters are not related to market variables;
  - c. the degree to which the market for relevant products is ‘one way’;
  - d. the existence of risks that cannot be hedged in relevant products; and

- e. the adequacy of the model in capturing the behaviour of the pay-off of the products in the portfolio. Banks must notify the PA of the models for which this approach is applied, and the methodology used to determine the PVA.

4.5.5 Where banks use the method described in paragraph 4.5.4, the prudence of the method must be confirmed, annually, by comparing the following:

- a. the PVAs calculated using the method described in paragraph 4.5.4, if it were applied to a material sample of the valuation models for which the bank applies the method in paragraph 4.5.3; and
- b. the PVAs produced by the method in paragraph 4.5.3 for the same sample of valuation models.

4.5.6 Banks must calculate the total category level PVA for model risk by applying, to individual model risk PVAs, the formulae for either Method 1 or Method 2 as referred to in the Exhibit 1.

4.6 Calculation of unearned credit spreads PVA

4.6.1 Banks must calculate the unearned credit spreads PVA to reflect the valuation uncertainty in the adjustment necessary, in accordance with the applicable accounting framework, to include the present value of expected losses due to counterparty default on derivative positions, discounted using a rate which approximate the risk-free rate. This PVA must be considered at counterparty level.

4.6.2 Banks must include the element of the PVA relating to mid-market value within the mid-market value PVA category. The element of the PVA relating to close-out cost uncertainty must be included within the close-out costs PVA category. The element of the PVA relating to model risk must be included within the model risk PVA category.

4.7 Calculation of investing and funding costs PVA

4.7.1 Banks must calculate the investing and funding costs PVA to reflect the valuation uncertainty in the funding costs used when assessing the exit price according to the applicable accounting framework. In calculating this PVA, banks must consider their historical funding costs for similar valuation positions. This PVA must be considered at valuation exposure level.

4.7.2 Banks must include the element of the PVA relating to mid-market value within the mid-market value PVA category. The element of the PVA relating to close-out cost uncertainty must be included within the close-out costs PVA category. The element of the PVA relating to model risk must be included within the model risk PVA category.

4.8 Calculation of concentration PVA

4.8.1 Banks must estimate a concentration PVA for concentrated valuation positions (individual concentrated positions PVA) by applying the following three-step approach:

- a. identify concentrated valuation positions;

- b. for each identified concentrated valuation position, where a market price applicable for the size of the valuation position is unavailable, banks must estimate a prudent exit period; and
- c. only where the prudent exit period exceeds 10 days, banks must estimate a PVA taking into account the volatility of the valuation input, the volatility of the bid offer spread and the impact of the hypothetical exit strategy on market prices.

4.8.2 For the purposes of subparagraph (a) of paragraph 4.8.1, the identification of concentrated valuation positions must consider all of the following:

- a. the size of all valuation positions relative to the liquidity of the related market;
- b. the institution's ability to trade in that market; and
- c. the average daily market volume and typical daily trading volume of the bank.

Banks must establish and document the methodology applied to determine concentrated valuation positions for which a concentrated positions PVA must be calculated.

4.8.3 Banks must establish and document the methodology applied to determine concentrated valuation positions for which a concentrated positions PVA must be calculated.

4.9 Calculation of future administrative costs PVA

4.9.1 Where a bank calculates mid-market value and close-out cost PVAs for a valuation exposure, which implies fully exiting the exposure, the bank may assess a zero PVA for future administrative costs.

4.9.2 Where a valuation exposure cannot be shown to have a zero PVA, according to paragraph 4.9.1, banks must calculate the future administrative cost PVA (individual future administrative costs PVA) considering the administrative costs and future hedging costs over the expected life of the valuation exposures for which a direct exit price is not applied for the close-out costs PVA, discounted using a rate which approximates the risk free rate. This PVA must be considered at valuation position level.

4.9.3 For the purposes of paragraph 4.9.2, administrative costs must include all incremental staffing and fixed costs that will be incurred in managing the portfolio. However, a reduction in these costs may be assumed as the size of the portfolio reduces.

4.9.4 Banks must calculate the total category level PVA for future administrative costs PVA as the sum of individual future administrative costs PVAs.

4.10 Calculation of early termination PVA

4.10.1 Banks must estimate an early termination PVA considering the potential losses arising from non-contractual early terminations of client trades. The early termination PVA must be calculated taking into account the percentage of client trades that have historically terminated early and the losses that arose in those cases. This PVA must be considered at valuation position level.

- 4.11 Calculation of operational risk PVA
- 4.11.1 Banks must estimate a PVA for operational risk to be zero, provided that the bank has a defined IPV process which is audited both internally and externally, and the audit outcome of the IPV process has indicated no material process failure. Where the bank does not have a defined IPV process which is audited both internally and externally or the audit outcome has indicated a material process failure, the bank must calculate an operational risk PVA as 10% of the sum of the aggregated category level PVAs for mid-market value and close-out costs.
- 4.12 Where the application of paragraphs 4.3 to 4.11 is not possible for certain positions, according to a fall-back approach, banks must identify the related financial instruments and calculate PVAs as the sum of:
- a. 100% of the net unrealised profit on the related financial instruments;
  - b. 10% of the notional value of the related financial instrument in the case of derivatives;
  - c. 25% of the absolute value of the difference between the fair value and unrealised profit, as determined in accordance with paragraph 4.12.1, of the related financial instrument in the case of non-derivatives.
- 4.13 For the purposes of paragraph 4.12 (a), unrealised profit refers to the positive change in fair value since trade inception is determined on a first-in-first-out basis.

## 5. **Exhibit 1: Formulae to be used for the purpose of aggregating PVAs**

Method 1:

$$\begin{aligned} \text{APV A} &= (\text{FV} - \text{PV}) - 50\% * (\text{FV} - \text{PV}) \\ &= 50\% * (\text{FV} - \text{PV}) \end{aligned}$$

$$\text{PVA} = \Sigma \text{APV A}$$

Method 2:

$$\begin{aligned} \text{APV A} &= \max\{0, (\text{FV} - \text{PV}) - 50\% * (\text{EV} - \text{PV})\} \\ &= \max\{0, \text{FV} - 50\% * (\text{EV} + \text{PV})\} \end{aligned}$$

$$\text{PVA} = \Sigma \text{APV A}$$

Where:

FV = The valuation exposure level fair value after any accounting adjustment applied in the bank's fair value that can be identified as addressing the same source of valuation uncertainty at the relevant PVA.

PV = The valuation exposure level prudent value determined in accordance with this Directive.

EV = The expected value at a valuation exposure level taken from the range of plausible values as referred to in this Directive.

APV A = The valuation exposure level PVA after adjusting for aggregation.

PVA = The total category level PVA after adjusting for aggregation.