

Domestic Small Letter  
Segment  
Volume Demand

ADDENDUM

1996 to 2008

Public Document



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diversifiedspecifics

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## KEY FINDINGS



**Key Findings**  
Domestic Small Letter Segment Volume Demand (1996 – 2008)  
ADDENDUM

## Overview

In December 2007 Diversified Specifics compiled an empirical study on behalf of Australia Post establishing the determinants of domestic small letter volume fluctuations within Australia over the 1995/96 to 2006/07 timeframe.

This addendum extends that analysis to December 2008 and attempts to:

1. Identify any major changes in segmented small letter volume trends, drivers and elasticities; &
2. Examine how perceptions relating to the short term economic outlook have impacted small letter volume projections for 2009 & 2010.

## Small Letter Volumes in the Short Term

Very recent trends in both Other and PreSort Barcoded small letter volume segments point towards a deteriorating small letter landscape.

Other small letter volumes have decreased at an increasing rate, attributable to a continuation of substitutive pressures in conjunction with an escalating real price.

Additionally, deteriorating domestic economic activity has combined with a depressed advertising industry to suppress transactional and promotional PreSort Barcoded small letter volume growth rates.

Of particular concern, the observed Non-farm Real GDP growth rate in the twelve months prior to December 2008 (1.82%) is significantly greater than all of the recognized 2009 institutional projections on that variable suggesting in the very short term PreSort Barcoded small letter volume growth will be eroded at an increasingly rapid rate (assuming historical associations remain constant).

Section 3 of the Addendum utilises the econometric models to quantify the impact of recent downwards revisions by five recognised financial institutions to their 2009 & 2010 GDP projections.

The result is a more pessimistic outlook for total small letter volumes than would have been projected six to twelve months earlier.

## Updated Models and Elasticities

The updated historical (December 1999 to December 2008) statistically significant demand elasticities<sup>1</sup> at a small letter level suggest:

- A 5% increase in credit card volumes was associated with a 4.5% decrease in Other Small Letter volumes (0.5% more elastic than the December 2007 research findings).
- A 5% increase in the real price of sending Other Small Letters was associated with a 3.2% decrease in Other Small Letter volumes (0.1% less elastic than the December 2007 research findings).
- A 5% increase in Real GDP (Non-farm) was associated with a 4.9% increase in PreSort Barcoded Small Letter volumes (0.5% more elastic than the December 2007 research findings).
- A 5% increase in the Consumer Discretionary Index (i.e. the measure of health within the advertising industry) was associated with a 0.6% increase in PreSort Barcoded Small Letter volumes (0.2% less elastic than the December 2007 research findings).

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<sup>1</sup> All elasticities are estimated at their mean and are applicable only to the timeframe over which the econometric models have been developed. In interpreting the elasticities within this document it is assumed all other factors are held constant.

1.0 INTRODUCTION



### 1.1.1 Background

In December 2007 Diversified Specifics compiled an empirical study on behalf of Australia Post attempting to establish the determinants of domestic small letter volume fluctuations within Australia over the 1995/96 to 2006/07 timeframe.<sup>2</sup>

The research findings generated a series of econometric<sup>3</sup> models and provided statistical evidence of a dynamic postal landscape characterised by the combined effects of substitution, consolidation and rationalisation.

By delineating the total into two separate letter product streams the statistical investigation concluded Other small letters<sup>4</sup> and PreSort Barcoded small letters<sup>5</sup> were each defined by differing underlying characteristics resulting in a diverse set of explanatory drivers.

Over the examinable timeframe the Other small letter volume segment tended to be characterised by a declining trend attributable primarily to a behavioural change by consumers when engaging in bill payment activities.

Specifically, Australian consumers and small business enterprises developed an increasing propensity to engage in telephone and internet bill payment mediums at the expense of the traditional single piece mail item that formerly comprised a larger proportion of cheques and money orders within that mail segment.

In addition the research undertaking also stressed the importance of economic growth in accounting for the high growth rates in PreSort Barcoded small letter volumes over, in particular, the 1995/96 to 2000/01 period.

Since that time movements towards consolidation and rationalisation of these bulk small letter volumes have begun to challenge the nature of this traditional association despite a considerable upside continuing to be generated by the flow-on effects derived from consistently strong domestic economic growth figures.

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<sup>2</sup> 'Domestic Small Letter Segment Volume Demand', Diversified Specifics, December 2007, Report commissioned by Australia Post.

<sup>3</sup> Econometric techniques in this context implies historical domestic mail volume data is related to a number of independent variables with statistical tests determining a set of preferred explanatory and forecasting equations.

<sup>4</sup> 'Other small letter' segment consists of full rate business mail, cheque payments and other consumer correspondence that satisfy the relevant small letter category size and weight requirements; the major products categories are Ordinary Letters and Clean Mail.

<sup>5</sup> 'PreSort Barcoded small letter' segment consists of bulk (300+) lodgements of 1) Business transactional letter volumes such as bills, statements, share notices and letters advising customers of price increases, policy changes, etc; & 2) Direct mail including promotional letters, brochures and other addressed promotional material that satisfies the relevant small letter category size and weight requirements; the dominant product category is business transactional PreSort Letters.

### 1.1.2 The Purpose Of This Addendum

The previous research undertaken predated the current high levels of instability characterising global financial markets and the nature of the derived econometric models now suggest this uncertainty is likely to flow through to future domestic letter volumes via the direct association with fluctuations in the level of Australian economic activity.

This addendum seeks to update the small letter volume econometric models (by extending the examinable timeframe to include data observations to December 2008) and give those models practical application by forward projecting small letters volumes where Non-farm GDP has registered as a statistically significant volume driver (at the Presort Barcoded and Total small letter level).

Crucial to this exercise, any efforts to utilise econometric models for the purposes of projecting letter volumes must be attended to by an accurate specification of values for each of the explanatory variables.

Therefore this addendum is designed to illustrate that, as a consequence of recent events, many institutions have revised downwards their forward estimates of Australian GDP and this has resulted in a more pessimistic outlook for domestic small letter volumes than was the case when the previous research undertaken had been finalised.

In Section 3 of this Addendum Diversified Specifics presents a "Then & Now" illustration of how 2-year projections for the various domestic letter segments have altered as of late<sup>6</sup> by virtue of these changing institutional perceptions.

It must be stressed that the volume projections outlined in Section 3 of this Addendum are solely based upon projected changes in economic activity and any further information on other statistically significant variables included within the models that could significantly impact upon letter volumes (such as any short term changes in nominal price or perceptions surrounding the outlook of the advertising industry) have all been held constant.

Indeed, the econometric models, by design, are simply a representation of historical associations and their utility in projecting a range of differing scenarios is dependent upon the extent to which future associations replicate those prior.

For the purpose of clarity and to avoid duplication all definitions, statistical methodologies and caveats stated in the December 2007 small letter public document as produced by Diversified Specifics also hold for this Addendum.

Indeed, the source documentation should be consulted by the reader should further clarification on any of these matters be required.

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<sup>6</sup> The limited availability of short term projections on the independent variables, as generated by leading institutions, provides a rationale for projecting growth rates forward by a period of only two years rather than adopting a longer outlook.



As an extension to the research undertakings conducted in the December 2007 small letter volume demand study<sup>7</sup>, this Addendum is aimed at:

- Exploring the extent to which the most recent past and short term outlook concerning each of the small letter volume segments has altered from that of the December 2007 study;
- Revisiting the hypothetical assumptions underlying the factors driving domestic segmented small letter volumes within Australia;
- Sourcing, collecting and transforming (where required) the relevant data to assess the statistical significance of the developed hypotheses inclusive of data observations to December 2008;
- Updating the econometric models generated in the December 2007 study and estimating the revised statistically significant demand elasticities;
- Utilising a changing set of GDP projections as given by recognised institutional bodies to emphasise the likely forward impact upon small letter volumes at Australia Post over the next two years given previous associations (as quantified by the preferred econometric models) hold constant;
- Undertaking the above research in a manner that facilitates future comparisons in the absence of significant structural changes;
- Producing summary documentation (this source document and a key findings brief) to be utilised internally at Australia Post to assist in policy formulation and the development of managerial reports;  
&
- Assisting Australia Post by providing input into the development of small letter volume forecasts.

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<sup>7</sup> 'Domestic Small Letter Segment Volume Demand', Diversified Specifics, December 2007, Report produced on behalf of Australia Post, p.9.

2.0 MODEL UPDATES



As part of the updated research conducted within this project an extensive array of statistical analysis was undertaken to investigate each of the hypotheses developed in the December 2007 study.<sup>8</sup>

Table 2.1 contains a listing of each variable, grouped across relevant thematic groups, utilised within the test procedure.

A full listing of all original data sources and available timeframes are contained in Appendix 1 of this Addendum.

**Table 2.1**

<b>List of Examined Explanatory Variables &amp; Thematic Grouping</b>		
<b>Category</b>	<b>Other Small Letter Volume Segment</b>	<b>PreSort Barcoded Small Letter Volume Segment</b>
<b>Financial &amp; Substitutive</b>	Credit Card Volumes Cheque Volumes Money Order Volumes	Credit Card Volumes
<b>Macroeconomic</b>	Australian Non-farm GDP	Australian Non-farm GDP Advertising Industry Health Measure Australian Retail Trade
<b>Product</b>	Small Letter Delivery Performance Real Price of Other Small Letters	Small Letter Delivery Performance Real Price of PreSort Barcoded Small Letters
<b>Demographic</b>	Estimated Australian Population	Estimated Australian Population
<b>Postal</b>	Introduction of Barcoding Technology Closure of the Unbarcoded PreSort Service	Introduction of Barcoding Technology Closure of the Unbarcoded PreSort Service
<b>Extraneous</b>	Socio-economic Disruptions	Political Events Major Events

All confidential and non-confidential data and statistical outputs in addition to detailed charting activities generated by Diversified Specifics in the research phase for this Addendum have been provided to Australia Post in the form of a supplementary reference document.

<sup>8</sup> To avoid repetition, the reader is advised to consult Section 3 of the source document produced in the previous research undertaking which contains a complete specification and thorough overview of each hypothesised association tested.

## 2.2. UPDATED PREFERRED MODELS

The previous research undertaking, finalised in December 2007 and based upon data inclusive of June 2007, generated two separate segmented small letter models, one for Other small letter volumes and the other for PreSort Barcoded small letter volumes.

In the statistical analysis pertaining to this Addendum, July 1995 to December 2008 Australia Post letter volume data was utilised to update the mathematical equations containing statistically significant domestic small letter volume drivers and generate revised elasticity estimates.

This process, which extended the examinable timeframe to include observations up to and inclusive of the 2008 December quarter, produced econometric models registering similar diagnostic and structural characteristics to models developed in the previous study.

Both models also continued to include statistically significant non-market factors, each recognising the impact of letter volume migration amongst the two product streams based upon changes in Australia Post product definitions.

Table 2.2 contains a listing of the statistically significant market based drivers for each model and also presents a comparison of the most recent 12 month growth rates as generated by the current and former research undertakings.

**Table 2.2 Small Letter Volume Segments & Key Market Based Volume Drivers<sup>9</sup>**

Variables	Recent Annual Growth Rates	
	This Study 12 Months to December 2008	Previous Study 12 Months to June 2007
<b>Elements of the Other Small Letter Volume Model</b>		
Other Small Letter Volumes	-4.23%	-3.40%
Credit Card Volumes	3.05%	4.40%
Real Price of Other Small Letters	2.26%	-3.27%
<b>Elements of the PreSort Barcoded Small Letter Volume Model</b>		
PreSort Barcoded Small Letter Volumes	2.76%	4.01%
Non-Farm Real GDP	1.82%	3.92%
Advertising Industry Health Measure	-54.55%	25.26%

*Note: The 12 Month Growth Rate is calculated via a comparison of volumes at the commencing and concluding months over the 12 month period.*

Section 3 of this Addendum utilises the econometric models for projection purposes over the next couple of years however Table 2.2 is intended to establish a guide of the very recent past and provides initial signs pointing towards a deteriorating small letter landscape.

Specifically, when contrasting the outcomes of this research undertaking with the December 2007 study, over the 2008 calendar year Other small letter volumes have decreased at an increasing rate (-4.23% as contrasted to -3.40%).

<sup>9</sup> The Other small letter volume segment econometric model was specified over the December 1999 to December 2008 timeframe. The PreSort Barcoded small letter volume segment econometric model was specified over the July 1995 to December 2008 timeframe. For a further discussion on the rationale for timeframe selection please consult 'Domestic Small Letter Segment Volume Demand', Diversified Specifics, December 2007, Report produced on behalf of Australia Post.

Such movements are attributable to a continuation of substitutive pressures in combination with an increasing real price.

Indeed, the strong PreSort Barcoded small letter volume annual growth rate that was evident in the final twelve months of the timeframe examined in the previous study (4.01% to June 2007) has softened in recent times (registering 2.76% in the twelve months prior to December 2008).

The descriptive statistics presented in Table 2.2 therefore highlight the deterioration in the economic climate combined with a worsening in the general health of the advertising industry has tended to suppress PreSort Barcoded small letter volume growth rates.

Of particular concern, the observed Non-farm Real GDP growth rate in the twelve months prior to December 2008 (1.82%) is significantly greater than all of the recognized 2009 institutional projections (See Table 3.1) on that variable suggesting in the very short term future PreSort Barcoded small letter volume growth will continue to be eroded.<sup>10</sup>

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<sup>10</sup> The implicit assumption here is that all empirical associations hold true when extrapolating into the future. Although a reasonable assumption to make it should be noted that within the examinable timeframe attributable to the PreSort Barcoded small letter volume econometric model the underlying data does not contain observations on Non-farm Real GDP as low as those projected by each of the recognised institutions and it is therefore possible that the detected model characteristics (drivers and strengths of association) may alter as a result.

## 2.3. THE OTHER SL MODEL

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### 2.3.1 Overview

The Other Small Letter model explains 89.7% of the total quarterly variation in Other Small Letter volumes over the December 1999 to December 2008 timeframe.

This compares favourably to the model generated in the December 2007 study which was characterised by a statistical fit of 83.8% of the total quarterly variation in Other small letter volumes over the December 1999 to June 2007 timeframe.

When contrasted to the December 2007 model, the responsiveness of Other Small Letter volumes to changes in credit card volumes has slightly increased (*See the elasticity in (1) below*) whereas the strength of association with real price has slightly declined (*See the elasticity in (2) below*).

### 2.3.2 Market-based Drivers & Elasticities<sup>11</sup>

Presented below are the historical (December 1999 to December 2008) demand drivers together with the relevant demand elasticity.

#### 1. Credit Card Volumes

As growth in credit card volumes continues, transactional bill payments that were formerly the domain of cheques and money orders which require a physical letter are increasingly being replaced by internet and telephone payment alternatives.

**Elasticity<sup>12</sup>:** A 5% increase in credit card volumes was associated with a 4.5% decrease in Other Small Letter volumes (0.5% more elastic than the December 2007 research findings).

**Predictor Variable Recent Trend:** Credit card volumes have been growing at an annual average rate of 5.33% since the start of 2000 and by 3.05% in the 12 months prior to December 31, 2008.

#### 2. Real Price

The real cost (i.e. price adjusted for inflationary effects) of sending Other Small Letter mail is inversely related to demand. Price changes in the examined time frame have been significantly associated with demand responses in the contrary direction.

**Elasticity:** A 5% increase in the real price of sending Other Small Letters was associated with a 3.2% decrease in Other Small Letter volumes (0.1% less elastic than the December 2007 research findings).

**Predictor Variable Recent Trend:** Real price has decreased at an annual average rate of 1.61% since the start of 2000 and increased by 2.26% in the 12 months prior to December 31, 2008.

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<sup>11</sup> The non-market based migratory volume drivers have been excluded from this summary.

<sup>12</sup> All elasticities are estimated at their mean and are applicable only to the timeframe over which the econometric models have been developed. In interpreting the elasticities within this document it is assumed all other factors are held constant.

## 2.4. PRESORT BARCODED SL MODEL

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### 2.4.1 Overview

The PreSort Barcoded small letter volume model explains 95.5% of the total quarterly variation in PreSort Barcoded small letter volumes over the examinable timeframe i.e. from July 1995 to December 2008.

This outcome is almost identical to the model emanating from the December 2007 research undertaking that registered a statistical fit of 95.4% of the total quarterly variation in PreSort Barcoded small letter volumes over the December 1999 to June 2007 timeframe.

### 2.4.2 Market-based Drivers & Elasticities<sup>13</sup>

Presented below are the historical (July 1995 to December 2008) demand drivers together with the relevant demand elasticity.

#### 1. Real GDP (Non-farm)

Growth in Real GDP (Non-farm) was statistically significantly associated with growth in PreSort volumes over the examined time frame. This association emphasises the importance of the level of economic activity to Non-promotional (Transactional) and Promotional PreSort mailings.

**Elasticity:** A 5% increase in Real GDP (Non-farm) was associated with a 4.9% increase in PreSort Barcoded Small Letter volumes (0.5% more elastic than the December 2007 research findings).

**Predictor Variable Recent Trend:** Non-farm Real GDP has been growing at an annual average rate of 3.18% over the past eight years and by 1.82% in the 12 months prior to December 31, 2008.

#### 2. Advertising Industry Health Measure

Changing levels of activity within the advertising industry represented a statistically significant explainer of PreSort Barcoded Small Letter volume fluctuations. The Consumer Discretionary Index, employed in this study to measure such effects, has historically been associated with the Promotional component of PreSort Barcoded Small Letter volumes.

**Elasticity:** A 5% increase in the Consumer Discretionary Index (i.e. the measure of health of the advertising industry) was associated with a 0.6% increase in PreSort Barcoded Small Letter volumes (0.2% less elastic than the December 2007 research findings).

**Predictor Variable Recent Trend:** The Consumer Discretionary Index has fluctuated considerably since the start of 2000. Overall however, the index has decreased at an annual average rate of 9.95% over the past eight years. It has decreased by 54.55% in the 12 months prior to December 31, 2008.

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<sup>13</sup> The non-market based migratory volume drivers have been excluded from this summary.

3.0 MODEL PROJECTIONS





### 3.1 DRAMATIC GDP PROJECTION CHANGES

Since the previous research undertaking high levels of instability have tended to characterise global and domestic financial markets.

Although the econometric models have exhibited a comforting level of robustness significant changes in the short term perceptions on the health of the domestic economy directly translate into projected total small letter volume growth variations.

In light of recent events, these impacts have primarily manifested themselves via the strong empirical association between fluctuations in the level of Australian economic activity and PreSort Barcoded small letter volume movements.

Any efforts to utilise the econometric models for the purposes of projecting letter volumes must be attended to by an accurate specification of values for each of the explanatory variables.

These recent events have resulted in many financial institutions revising downwards their forward estimates of Australian GDP (See Table 3.1) and this has given rise to a more pessimistic outlook for total small letter volumes (as illustrated in Section 3.2) than would have been projected six to twelve months earlier.

**Table 3.1 Australian GDP Projections**

Institution	2009	2010
<b>The Reserve Bank of Australia</b> Projected GDP Growth as at Feb 09 <sup>14</sup> Projected GDP Growth as at May 08 <sup>15</sup>	0.50% 2.50%	2.25% 2.75%
<b>ANZ Bank</b> Projected GDP Growth as at Feb 09 <sup>16</sup> Projected GDP Growth as at Jun 08 <sup>17</sup>	0.10% 2.70%	2.00% 3.50%
<b>National Australia Bank</b> Projected GDP Growth as at Mar 09 <sup>18</sup> Projected GDP Growth as at Sep 08 <sup>19</sup>	-0.70% 2.50%	1.10% 2.20%
<b>The Commonwealth Bank of Australia</b> Projected GDP Growth as at Mar 09 <sup>20</sup> Projected GDP Growth as at Jun 08 <sup>21</sup>	1.10% 2.80%	2.60% 3.20%
<b>International Monetary Fund</b> Projected GDP Growth as at Feb 09 <sup>22</sup> Projected GDP Growth as at Oct 08 <sup>23</sup>	-0.20% 2.24%	1.80% 3.07%

<sup>14</sup>The Reserve Bank of Australia, Statement On Monetary Policy, 6<sup>th</sup> of February 2009

<sup>15</sup> The Reserve Bank of Australia, Statement On Monetary Policy, 9<sup>th</sup> of May 2008

<sup>16</sup> ANZ Economic Outlook, March Quarter 2009

<sup>17</sup> ANZ Australian Economics Weekly, 20<sup>th</sup> of June 2008

<sup>18</sup> National Australia Bank, Australian Markets Monthly, p. 1, March 2009

<sup>19</sup> National Australia Bank Australian Markets Monthly, p.1, September 2008

<sup>20</sup> The Commonwealth Bank of Australia, Economic Perspective, 6<sup>th</sup> of March 2009

<sup>21</sup> The Commonwealth Bank of Australia, Economic Perspective, 27<sup>th</sup> of June 2008

<sup>22</sup> International Monetary Fund , Australia and the IMF, 7<sup>th</sup> of February 2009

<sup>23</sup> International Monetary Fund, World Economic Outlook Database, October 2008

## 3.2. VOLUME PROJECTIONS

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### 3.2.1 Underlying Assumptions

The econometric models may be utilised in conjunction with GDP growth rate projections (as given in Table 3.1) to project PreSort Barcoded small letter volume growth in 2009 and 2010.

In each case, all remaining factors other than the twin scenarios on economic growth are held constant to highlight the impact of deteriorating short term perceptions about the prosperity of the Australian economy and how these projections tend to result in a more pessimistic outlook for domestic small letter volumes.

Table 3.2.1 outlines the values selected as constants within the projection process for each of the statistically significant small letter volume drivers<sup>24</sup> other than GDP.

**Table 3.2.1**

Variable	Assumed Value	Rationale
<b>Advertising Industry Health Measure</b>	-9.95% p.a.	The Consumer Discretionary Index has fluctuated considerably since the start of 2000. Overall however, the index has decreased at an annual average rate of 9.95% over the past eight years.
<b>Credit Card Volumes</b>	5.3% p.a.	Credit card volumes have been growing at an annual average rate of 5.33% since the start of 2000.
<b>Real Price of Other Small Letters</b>	-1.6% p.a.	The real price of other small letters has decreased at an annual average rate of 1.61% since the start of 2000.

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<sup>24</sup> It should be noted that the growth projections contained within this section are not intended to represent the actual growth rates attributable to their respective letter segments. Rather these examples aim at utilising historical statistical associations to estimate the impact upon projected small letter volume growth rates of financial institutions altering their perceptions in regard to future rates of Australian economic growth in isolation of all other demand effects.

### 3.2.2 Caveats on the Projections

The projections produced in this Addendum are generated via the preferred econometric models and they therefore depend heavily upon:

- Accurately forecasting future growth rates for each of the explanatory drivers. Each of the following examples is focused upon illustrating the small letter impacts of financial institutions altering their GDP perceptions (holding all other effects constant). Table 3.1 specifies each of these GDP projections as produced by a range of respected financial institutions<sup>25</sup>;
- An assumption that prior statistical associations detected by the modelling continues to hold over the projection period (which may not always be the case). This implies the global and national economy should ideally remain similar to that of the sampled timeframe. As highlighted in Section 2.4.2 of this Addendum the income elasticity has appeared to increase at lower levels of economic growth and this might suggest the projections generated in this Addendum understate any small letter volume downturn. Until further observations become available however such findings remain inconclusive; &
- An assumption of comprehensiveness governing the statistically significant letter volume drivers. That is, there are other variables logically associated with each segment of letter volumes however significant variation over the sampled timeframe may not have been evident (such as delivery service performance in this instance). As a consequence these drivers tend to be excluded from the econometric models yet this should not understate their potential influence.

The projection methodology employed in this Addendum acknowledges these limitations and the impossibility of embedding all possible contingencies within the projected values.

It is therefore recommended that any interpretation of the projected results generated by these econometric methods be augmented by further internal and market-based intelligence where possible.

Indeed, previous studies undertaken by Diversified Specifics have illustrated the combined effects of substitution, consolidation and rationalisation have resulted in an increasingly dynamic postal landscape over the past decade.

This suggests a continual need for ongoing refinements and research to ensure the statistical validity of the associations and projections produced via the econometric models are constantly maintained.

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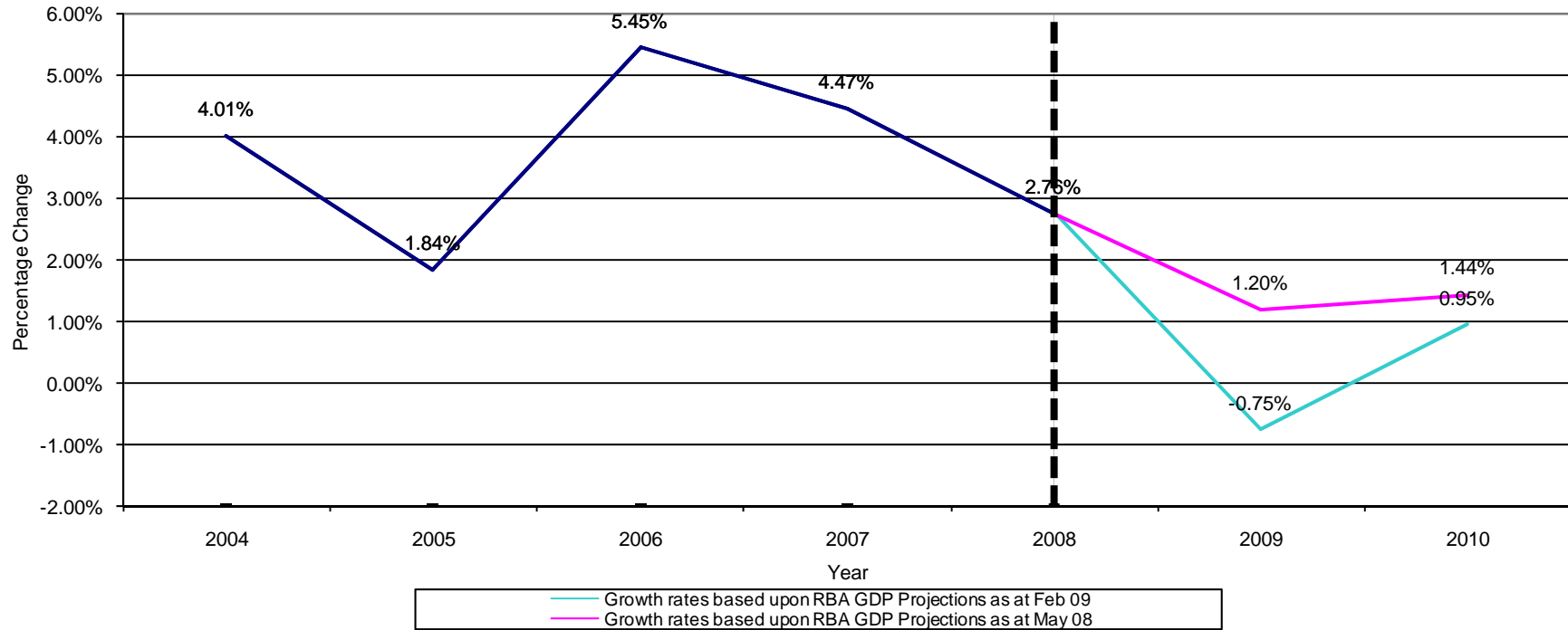
<sup>25</sup> In the examples provided projected GDP growth has been utilised as a proxy for Non-farm GDP growth due to an absence of institutional projections at an this level.

### 3.2.3 Reserve Bank of Australia

The following example employs the Reserve Bank of Australia (RBA) projections on GDP growth rates (as given in Table 3.1) to project PreSort Barcoded small letter volume growth in 2009 and 2010 under the two 'then and now' scenarios (See Chart 3.2.3.1).

**Chart 3.2.3.1**

**PreSort Barcoded Small Letter Volume Growth Rates**  
 Projections are based upon changing RBA perceptions about the Australian Economy



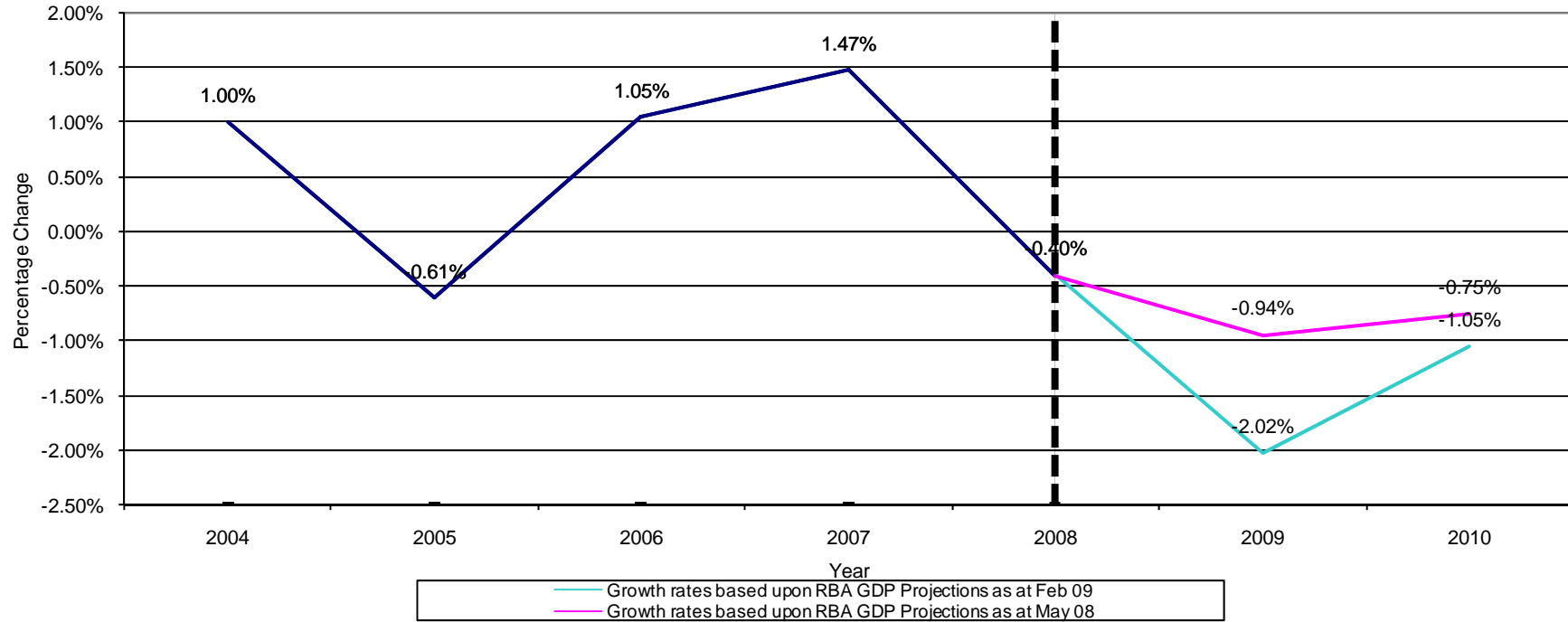
The division between historical and forecast volumes is given by the dashed line on the chart above.

**Data Source:** PreSort Barcoded Small Letter Volumes Historical Data: Letters Group, Australia Post.

This result translates into the following projections at a total small letter level:

**Chart 3.2.3.2**

**Total Small Letter Volume Growth Rates**  
Projections are based upon changing RBA perceptions about the Australian Economy



*The division between historical and forecast volumes is given by the dashed line on the chart above.*

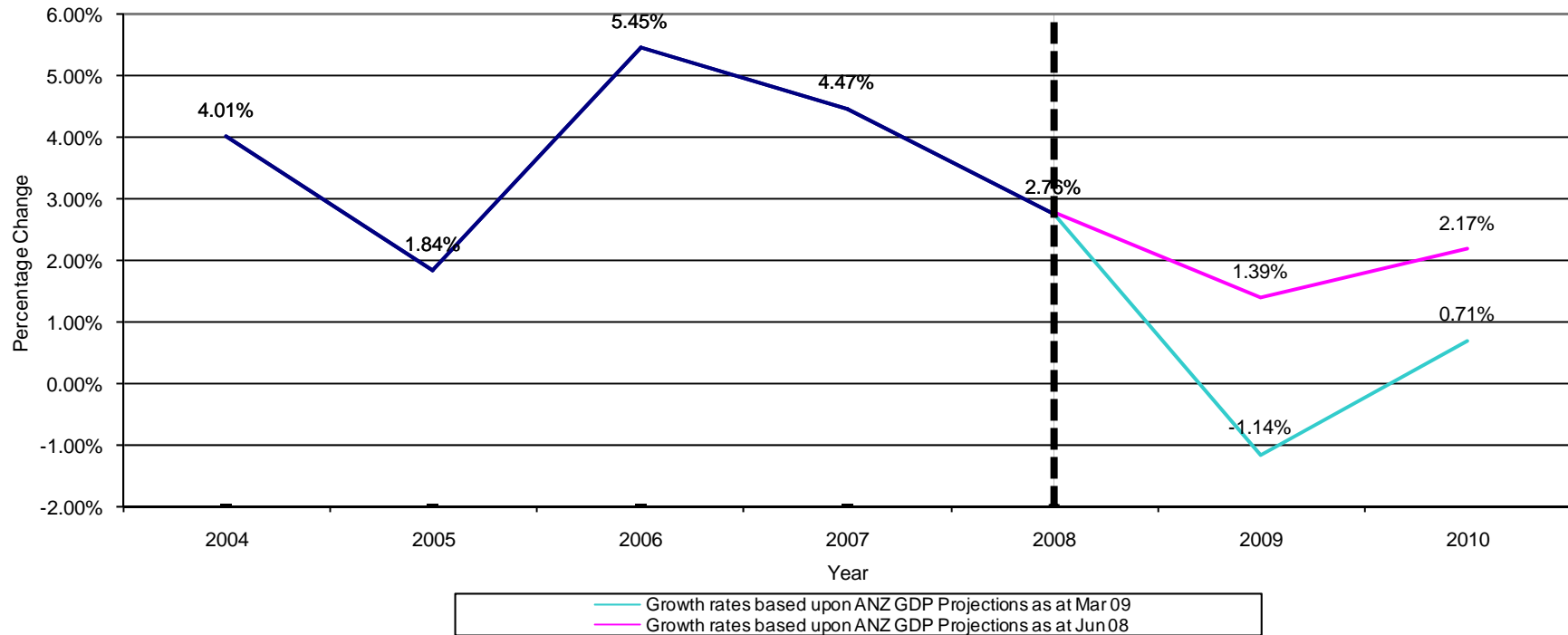
**Data Source:** Total Small Letter Volumes Historical Data: Letters Group, Australia Post.

### 3.2.4 ANZ Economic Outlook

ANZ Economic Outlook projections on GDP growth rates (as given in Table 3.1) are utilised in this example to project PreSort Barcoded small letter volume growth in 2009 and 2010 under the two 'then and now' scenarios (See Chart 3.2.4.1).

**Chart 3.2.4.1**

**PreSort Barcoded Small Letter Volume Growth Rates**  
 Projections are based upon changing ANZ perceptions about the Australian Economy



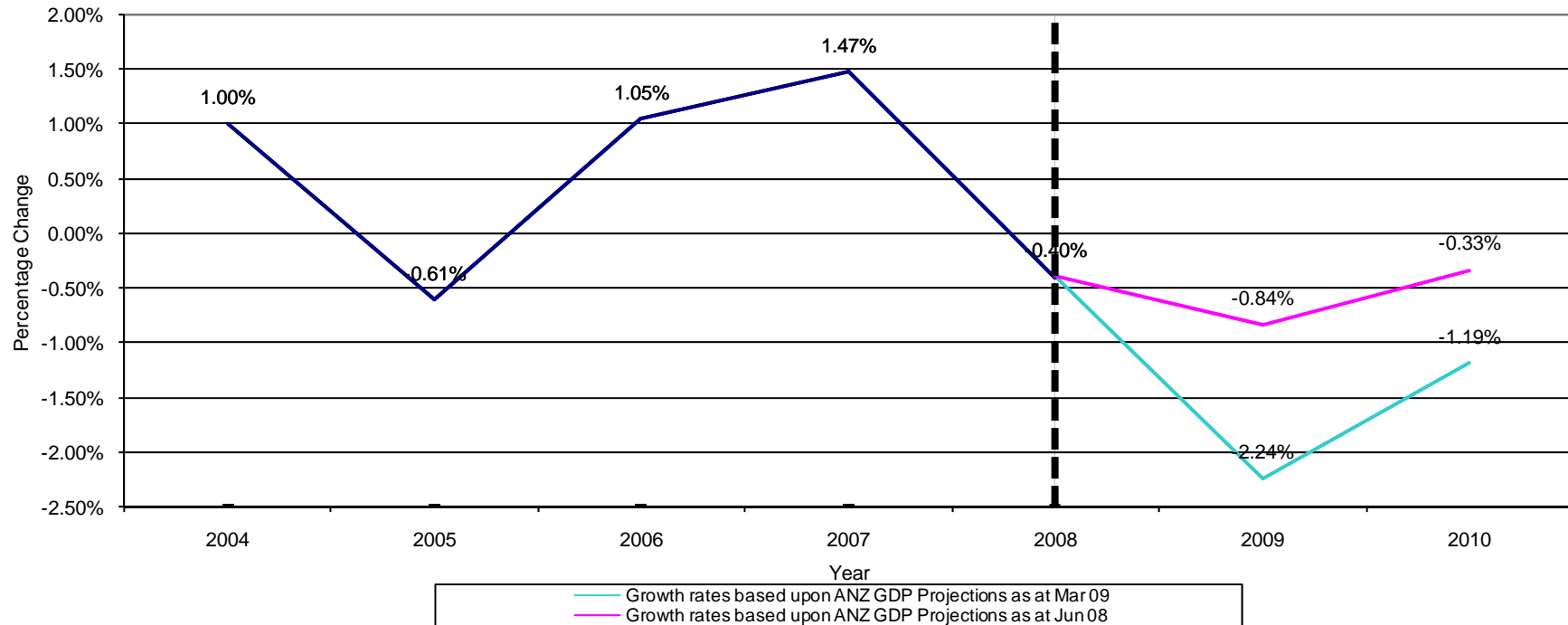
The division between historical and forecast volumes is given by the dashed line on the chart above.

**Data Source:** PreSort Barcoded Small Letter Volumes Historical Data: Letters Group, Australia Post.

This result translates into the following projections at a total small letter level:

**Chart 3.2.4.2**

**Total Small Letter Volume Growth Rates**  
Projections are based upon changing ANZ perceptions about the Australian Economy



*The division between historical and forecast volumes is given by the dashed line on the chart above.*

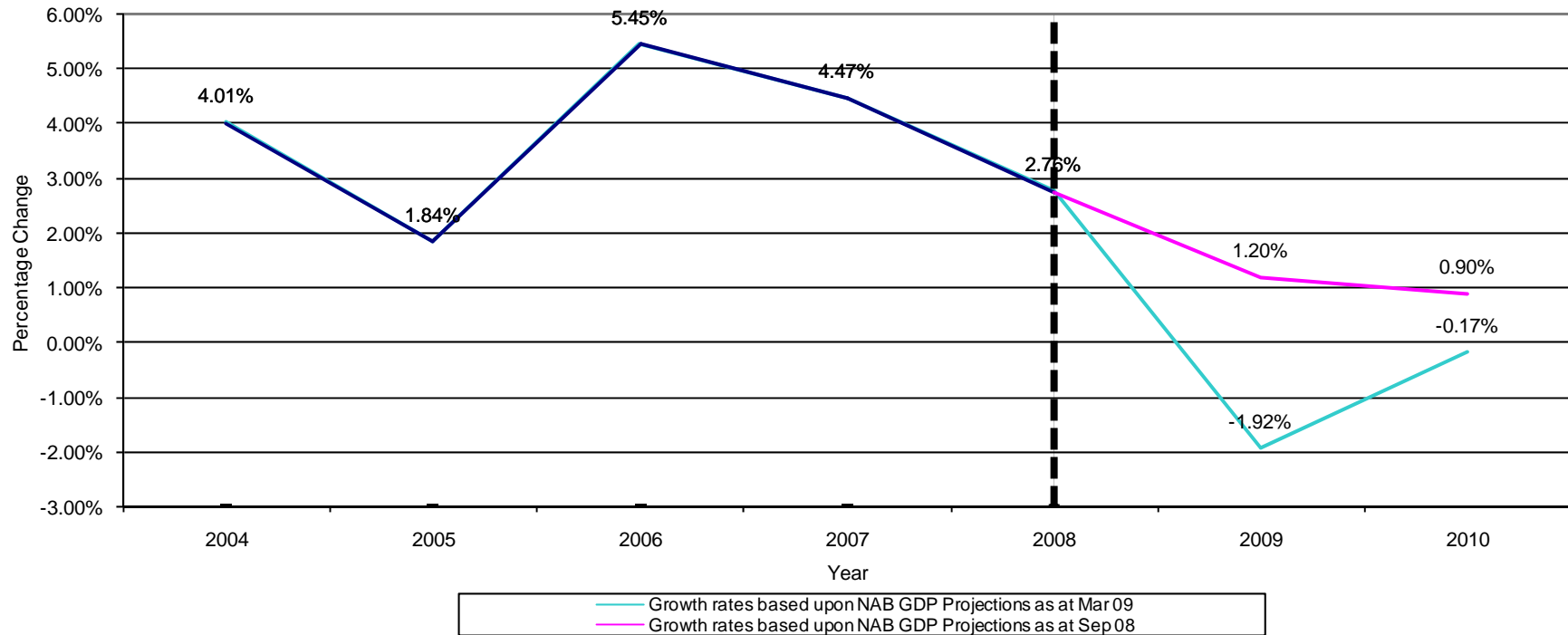
**Data Source:** Total Small Letter Volumes Historical Data: Letters Group, Australia Post.

### 3.2.5 National Australia Bank

The following example utilises National Australia Bank projections on GDP growth rates (as given in Table 3.1) to project PreSort Barcoded small letter volume growth in 2009 and 2010 under the two 'then and now' scenarios (See Chart 3.2.5.1).

**Chart 3.2.5.1**

**PreSort Barcoded Small Letter Volume Growth Rates**  
 Projections are based upon changing NAB perceptions about the Australian Economy



*The division between historical and forecast volumes is given by the dashed line on the chart above.*

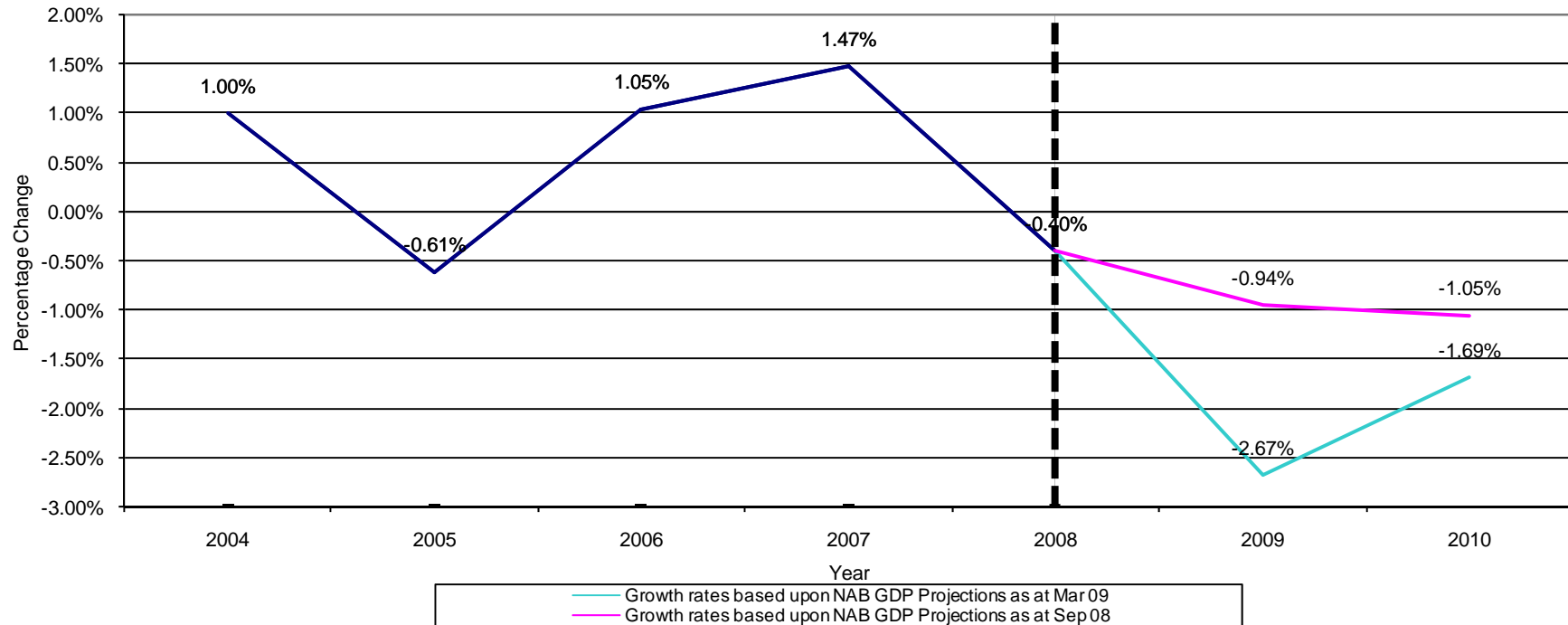
**Data Source:** PreSort Barcoded Small Letter Volumes Historical Data: Letters Group, Australia Post.



This result translates into the following projections at a total small letter level:

**Chart 3.2.5.2**

**Total Small Letter Volume Growth Rates**  
Projections are based upon changing NAB perceptions about the Australian Economy



*The division between historical and forecast volumes is given by the dashed line on the chart above.*

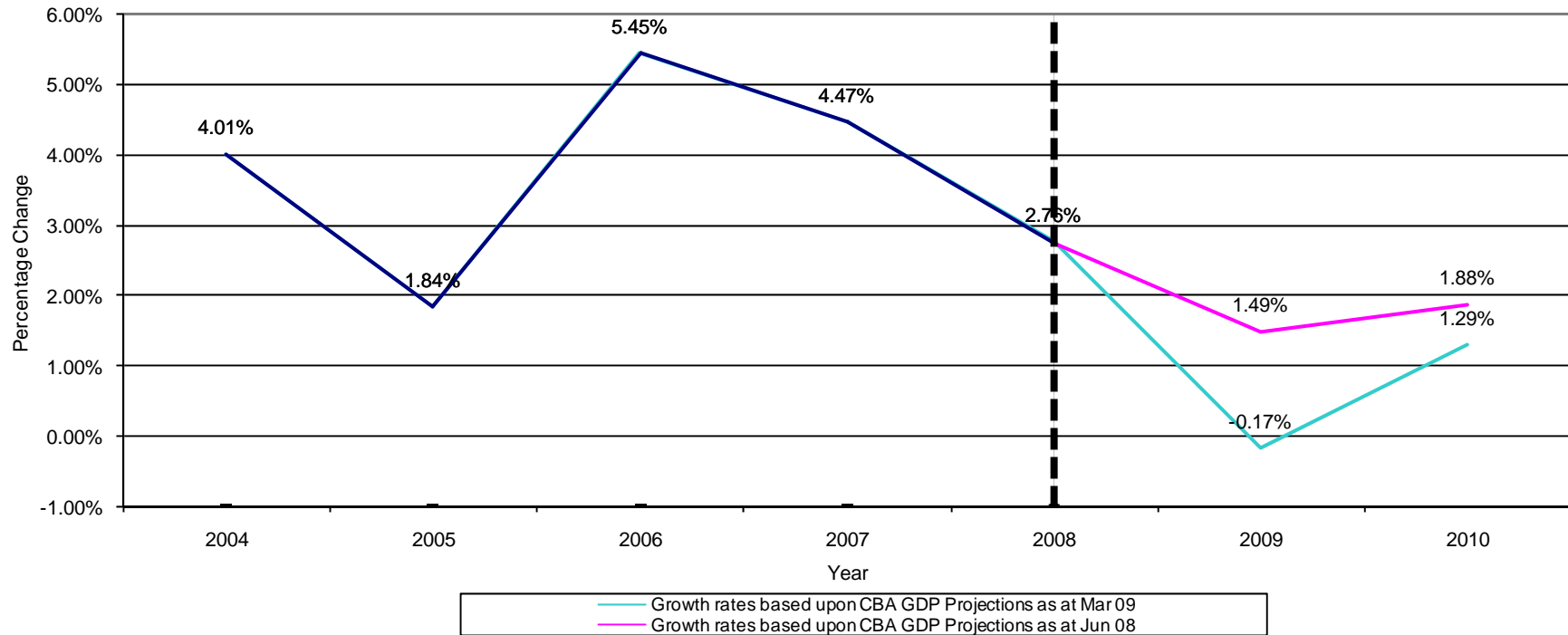
**Data Source:** Total Small Letter Volumes Historical Data: Letters Group, Australia Post.

### 3.2.6 The Commonwealth Bank of Australia

The following example employs the Commonwealth Bank of Australia projections on GDP growth rates (as given in Table 3.1) to project PreSort Barcoded small letter volume growth in 2009 and 2010 under the two 'then and now' scenarios (See Chart 3.2.6.1).

**Chart 3.2.6.1**

**PreSort Barcoded Small Letter Volume Growth Rates**  
 Projections are based upon changing CBA perceptions about the Australian Economy



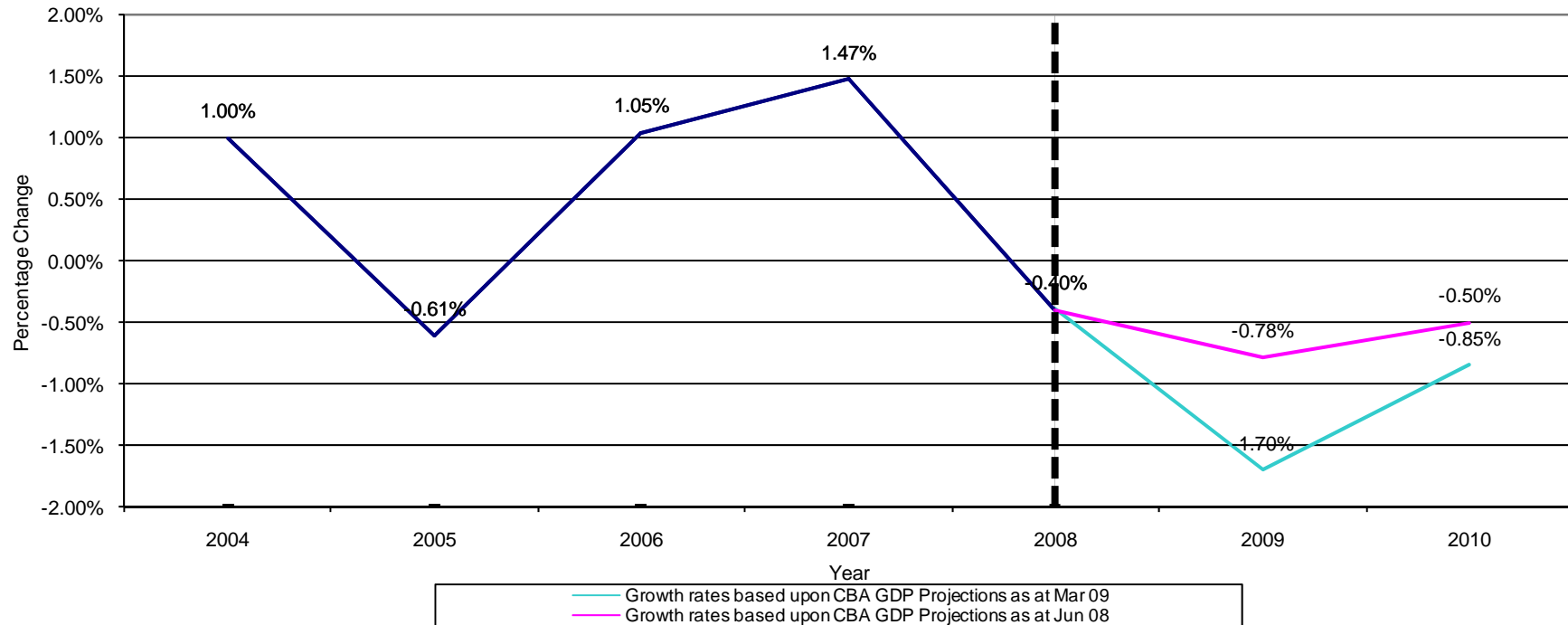
*The division between historical and forecast volumes is given by the dashed line on the chart above.*

**Data Source:** PreSort Barcoded Small Letter Volumes Historical Data: Letters Group, Australia Post.

This result translates into the following projections at a total small letter level:

**Chart 3.2.6.2**

**Total Small Letter Volume Growth Rates**  
 Projections are based upon changing CBA perceptions about the Australian Economy



*The division between historical and forecast volumes is given by the dashed line on the chart above.*

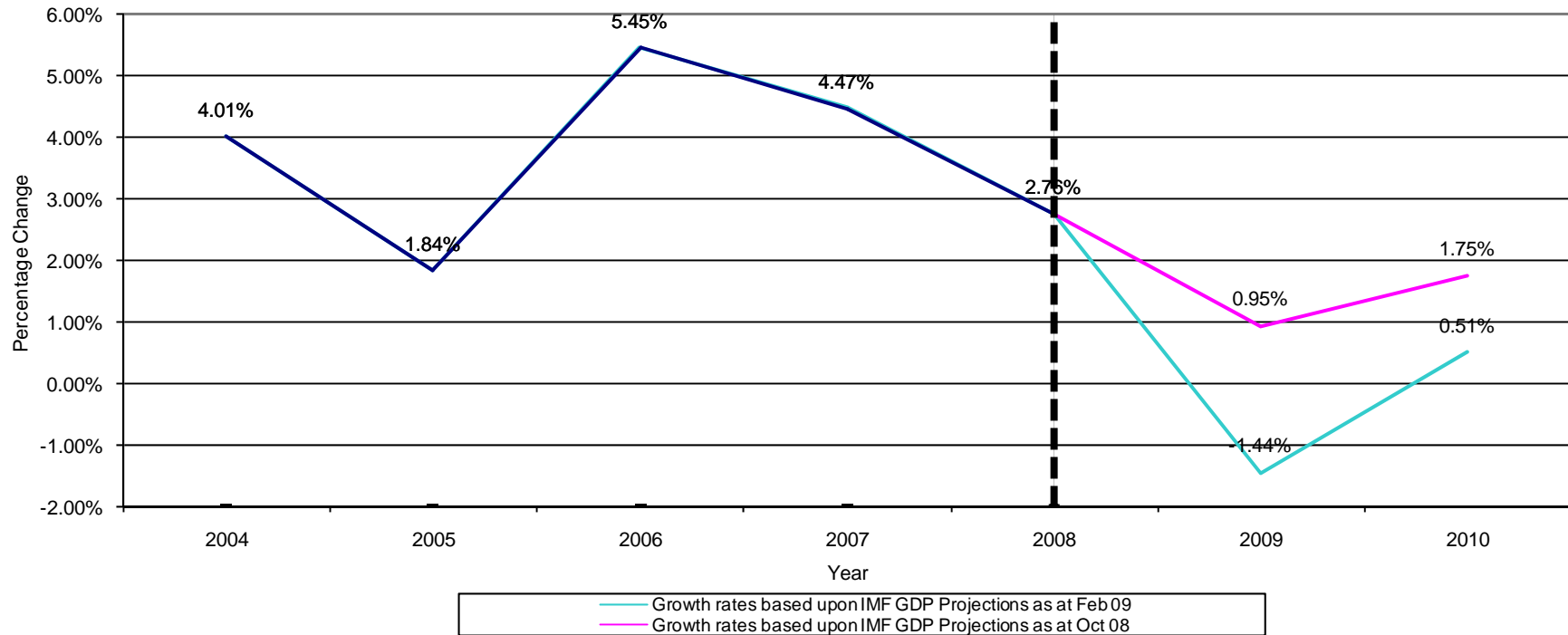
**Data Source:** Total Small Letter Volumes Historical Data: Letters Group, Australia Post.

### 3.2.7 The International Monetary Fund

The following example employs the International Monetary Fund projections on GDP growth rates (as given in Table 3.1) to project PreSort Barcoded small letter volume growth in 2009 and 2010 under the two 'then and now' scenarios (See Chart 3.2.7.1).

**Chart 3.2.7.1**

**PreSort Barcoded Small Letter Volume Growth Rates**  
 Projections are based upon changing IMF perceptions about the Australian Economy



*The division between historical and forecast volumes is given by the dashed line on the chart above.*

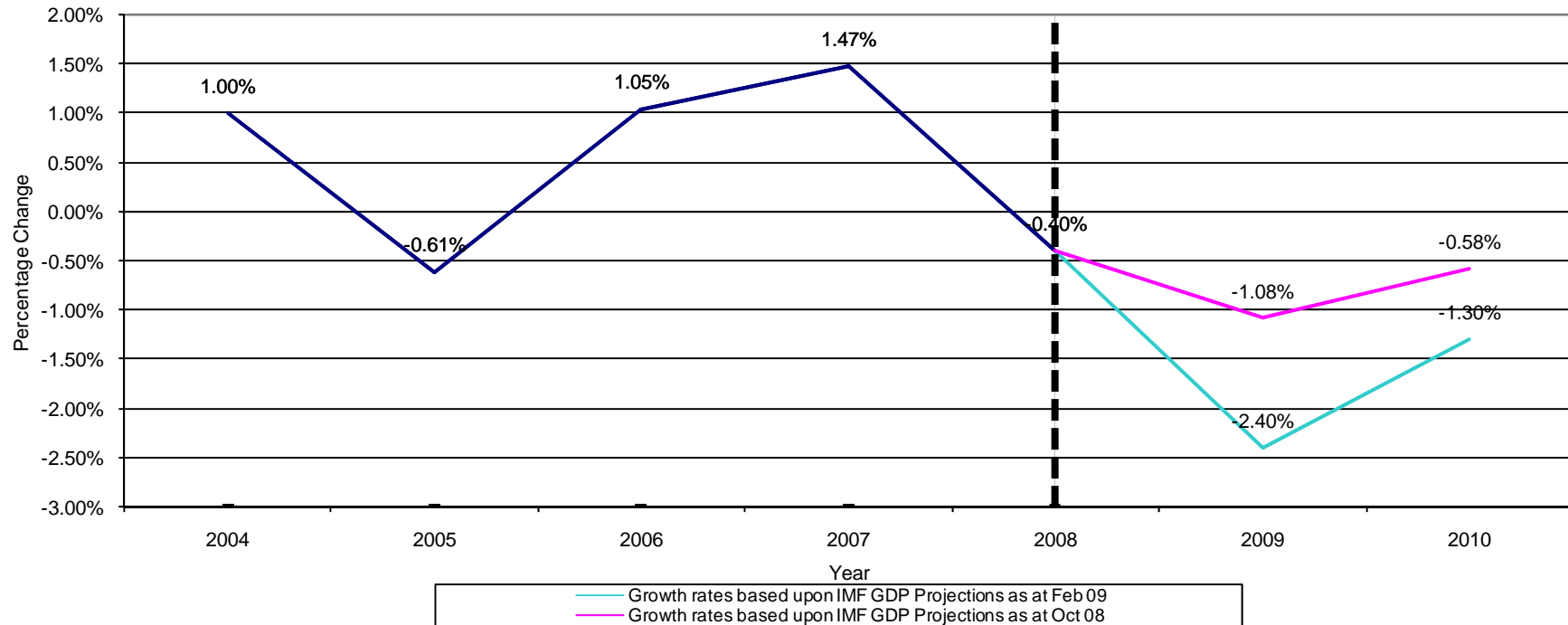
**Data Source:** PreSort Barcoded Small Letter Volumes Historical Data: Letters Group, Australia Post.

This result translates into the following projections at a total small letter level:

**Chart 3.2.7.2**

**Total Small Letter Volume Growth Rates**

Projections are based upon changing IMF perceptions about the Australian Economy



*The division between historical and forecast volumes is given by the dashed line on the chart above.*

**Data Source:** Total Small Letter Volumes Historical Data: Letters Group, Australia Post.

# APPENDIX A



**Internal Australia Post Data**

Letters Group of Australia Post supplied all letter mail volume data to Diversified Specifics including:

- Domestic Other Small Letter Volumes;
- Small Letter Delivery Performance; &
- Money Order Volumes.

**Externally Sourced Data**

To facilitate association testing and the development of econometric models, Diversified Specifics obtained variables from various external sources. Each variable that was sourced and assessed is outlined in Table A.1. Variables obtained were used to test developed hypothesis in an unbiased and structured manner.

Externally sourced variables outlined below that were not included in the final econometric models, were not found to be statistically significant in relation to segment-specific volumes.

Table A.1  
**Externally Sourced Data Descriptions**

Volume Predictor	Variable	Series Timeframe Utilised (Data Frequency)	Data Source
Real Price of Other Small Letters	Real Price of Other Small Letters	September 1995 to December 2008 – Quarterly series	Nominal price of Small Letters: Australia Post; GDP Implicit Price Deflator: Gross Domestic Product, Cat. No. 5206.0 Table 5. Expenditure on Gross Domestic Product (GDP), Australia: Implicit price deflators, Australian Bureau of Statistics
Real Price of PreSort Barcoded Small Letters	Real Price of PreSort Barcoded Small Letters	September 1995 to December 2008 – Quarterly series	Nominal price of Small Letters: Australia Post; GDP Implicit Price Deflator: Gross Domestic Product, Cat. No. 5206.0 Table 5. Expenditure on Gross Domestic Product (GDP), Australia: Implicit price deflators, Australian Bureau of Statistics
Australian Non-farm GDP	Australian Non-farm GDP	September 1995 to December 2008 – Quarterly series	Gross Domestic Product minus Agriculture, Forestry and Fishing (A), Cat. No. 5206.0 Table 6 Gross Value Added by Industry, Australia, Chain volume measures, Australian Bureau of Statistics
Money Order Volumes	Money Order Volumes	July 1995 to December 2008 – Monthly series	Australia Post
Cheque Volume	Cheque Volume	January 2002 to December 2008 – Monthly series	Total Number of Cheques, Cheques and Direct Entry Payments - C5, Reserve Bank of Australia <a href="http://www.rba.gov.au/Statistics/Bulletin/C05hist.xls">http://www.rba.gov.au/Statistics/Bulletin/C05hist.xls</a>
Credit Card Volumes	Credit Card Volumes	July 1995 to December 2008 – Monthly series	Number of Accounts, Credit and Charge Card Statistics - C1, Reserve Bank of Australia, <a href="http://www.rba.gov.au/Statistics/Bulletin/C01hist.xls">http://www.rba.gov.au/Statistics/Bulletin/C01hist.xls</a>
Estimated Australian Population	Estimated Australian Population	September 1995 to September 2008 – Quarterly series	Estimated Resident Population (ERP), Cat. No. 3101.0 Table 1. Population Change, Summary - Australia ('000),

Volume Predictor	Variable	Series Timeframe Utilised (Data Frequency)	Data Source
			Australian Bureau of Statistics
Retail Trade	Australian Retail Trade	September 1974 to December 2008 – Quarterly series	Retail Trade (G), Cat. No. 5206.0 Table 6 Gross Value Added by Industry, Australia, Chain volume measures, Australian Bureau of Statistics
Advertising Industry Health Measure	Media Index	September 1995 to December 2008 – Quarterly series	S&P/ASX 200 Consumer Discretionary Index, Standard and Poor's, <a href="http://www2.standardandpoors.com/portalsite/sp/en/au/page.topic/indices_asx200/2,3,2,8,8,19,2008,0,0,1,1,0,0,0,0,0.html">http://www2.standardandpoors.com/portalsite/sp/en/au/page.topic/indices_asx200/2,3,2,8,8,19,2008,0,0,1,1,0,0,0,0,0.html</a>
SARS	The Severe Acute Respiratory Syndrome (SARS)	Dichotomous Variable	Internally constructed variable – Diversified Specifics
September 11	The September 11 Terrorist attacks	Dichotomous Variable	Internally constructed variable – Diversified Specifics
Federal Elections	Federal Election	Dichotomous Variable	Internally constructed variable – Diversified Specifics
State Elections	State Election	Dichotomous Variable	Internally constructed variable – Diversified Specifics
Referendums	Referendum	Dichotomous Variable	Internally constructed variable – Diversified Specifics
Barcoding Introduction	Introduction of Barcoding Technology	Dichotomous Variable	Internally constructed variable – Diversified Specifics
Closure of the Unbarcoded PreSort Service	Unbarcoded PreSort Service and Go Mail Discontinuation	Dichotomous Variable	Internally constructed variable – Diversified Specifics
Olympic Games	Olympic Games – Sydney Olympic Games	Dichotomous Variable - September 2000	Internally constructed variable – Diversified Specifics

All price data was supplied to Diversified Specifics by Australia Post (in the form of average revenue factor data), upon which Diversified Specifics deflated the series using an appropriate deflator to derive real price per small letter volume segment.