



# Are retail sales well above expectations?

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June, 2009

## Executive Summary

- The federal government has dramatically increased spending since September 2008 to reduce the effects of the global financial crisis.
- Rather than cut taxes the government chose to stimulate the demand side of the economy. There has been some debate as to whether that approach has worked or even could work.
- The major question is whether individuals would quickly spend the stimulus money or whether they would save the money.
- Unfortunately, the Australian Bureau of Statistics has stopped calculating its Retail Sales Trend figures - apparently the increase in federal government spending would distort the actual calculation.
- We calculate alternate measures of Retail Sales Trends.
- We show that the recent (apparent) increases in retail sales are not very different from estimates of Trend.
- This suggests that the government stimulus package has not worked as planned.
- Furthermore, our analysis is consistent with ABS data showing no unusual pattern in household expenditure.

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## About the authors

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## 1.0 Introduction

Since late 2008 the federal government has increased spending in an attempt to stimulate the economy and stave off a recession. It might be argued that the federal government has succeeded in that respect. While unemployment has increased since November 2007 it remains relatively low compared to the early 2000s. Similarly, it appears that the economy will avoid two consecutive quarters of negative growth – a popular, if somewhat unscientific, definition of recession. A large proportion of the increase in government spending has been targeted at households. In particular low and middle income households that are more likely to spend the money and so stimulate the economy.

It is not immediately clear whether this government spending has succeeded or not. To the extent that individuals pay off their credit cards the money is being saved. On the other hand individuals may pay off their credit card now and increase spending on that card in the near future. Of course the media has been full of articles indicating that individuals have increased spending on poker machines and plasma televisions. Some individuals told reporters that they intended to get tattoos or spend the money on prostitutes. That type of spending does not undermine the policy objective. The policy objective is to stimulate increased spending in the economy irrespective of what the spending actually entails.

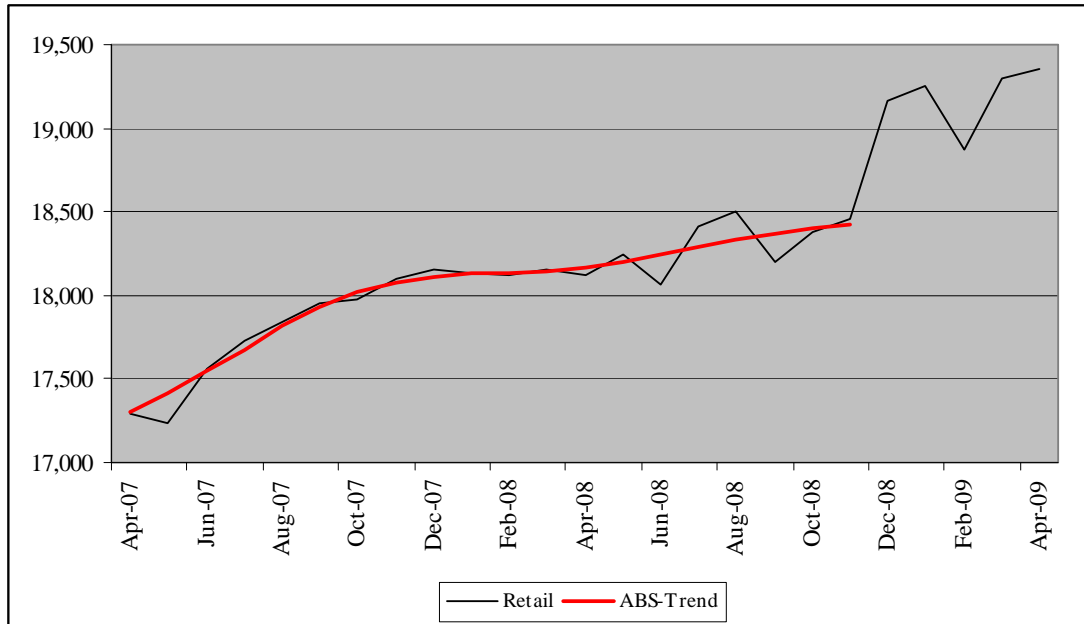
The question of interest is whether there is more retail spending than otherwise would have been the case? This requires generating a counter-factual – what would spending have been? This, of course, is the \$52 billion question. It is extraordinarily difficult, if not impossible, to establish what would otherwise have happened. It is possible however to compare seasonally adjusted spending with various trends of spending. Unfortunately, the Australian Bureau of Statistics has stopped calculating its Retail Sales Trend figures. Their argument being that the increase in federal government spending would distort the actual calculation. That argument may or may not be plausible. We make no judgement on that issue – rather we estimate alternate trend figures and compare them to the truncated ABS Trend figures and also to the ABS Retail Sales (seasonally adjusted) figures.

In summary, we do not find that Retail Sales are well above our estimates of the trend in Retail Sales. In the next section we describe the debate to date regarding Retail Sales and also describe a previous similar effort. Section three contains our results. Section four concludes. Details of our technique are in the appendix.

## 2.0 Retail Sales

Figure one replicates a figure from the ABS. In that figure the ABS show a trailing two-year period indicating the seasonally adjusted Retail Sales figures and also the truncated Trend figures for Retail Sales.

Figure One: Retail Sales (seasonally adjusted) April 2007 – April 2009



Source: ABS 8501.0 Retail Trade, Australia

An observer might look at a figure such as this and conclude that if the ABS Trend line had persisted on its current path (or something very similar) that a massive increase in Retail Sales had occurred. That would be an easy conclusion to draw; after all the ABS Trend line is much flatter in the post-October 2007 period than before and a flattish line can be expected to remain flat.

Indeed that type of analysis was undertaken by Tony Meer of Deutsche Bank and reported at Peter Martin's blog.<sup>1</sup> Peter Martin is the Canberra based economics correspondent for *The Age*.

<sup>1</sup> See <http://petermartin.blogspot.com/2009/04/so-retail-spending-is-down.html>

Figure Two: Tony Meer – Deutsche Bank Analysis

**Figure 1: Rudd-Drop I continues to impact the level of retail trade**



Source: Deutsche Bank, ABS

Source: <http://petermartin.blogspot.com/2009/04/so-retail-spending-is-down.html>

Based on this type of analysis, Peter Martin wrote in his *The Age* (2 April 2009) column:

An *Age* comparison of recorded spending with what would have been spent had the pre-December trend continued suggests that Australians spent an extra \$370 million more in February, an extra \$780 million in January and an extra \$710 million in December.

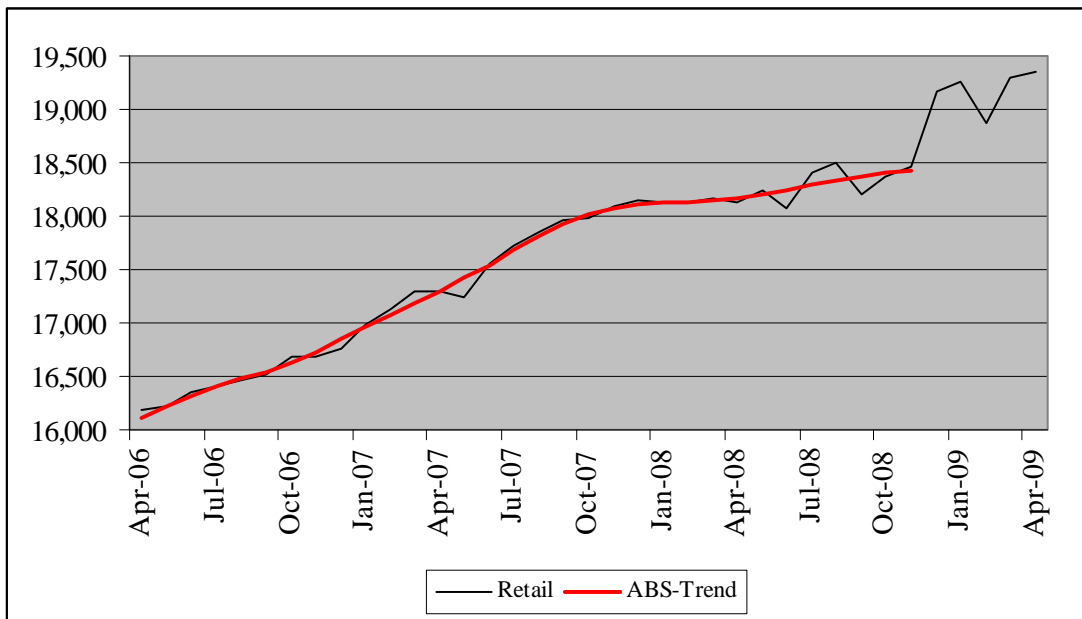
The combined \$1.8 billion in extra spending accounts for a sizable proportion of the \$8.7 billion handout, some more of which would have spent in ways not measured by the retail statistics and still more of which is likely to be spent in coming months.<sup>2</sup>

Looking at that analysis those figures are plausible. The point of contention, however, is the counter-factual. The issue is 'Retail if previous trend had persisted'.

There are a few points worth considering. First the time periods shown in the figures are very short. Second the scales shown on the y-axis are close to the data. This has the effect of magnifying the graphs. That is entirely appropriate if all we wish to do is observe recent developments. It is not clear, however, that it is appropriate for forming opinions about long-term trends. Consider figure three, here we have added an additional one year worth of data. While the flat portion October 2007 through 2008 remains, it is no longer clear that the more recent Retail Sales figures are out of line with a trend.

<sup>2</sup> <http://petermartin.blogspot.com/2009/04/almost-alone-we-australians-are-still.html>

Figure Three: Retail Sales (seasonally adjusted) April 2006 – April 2009



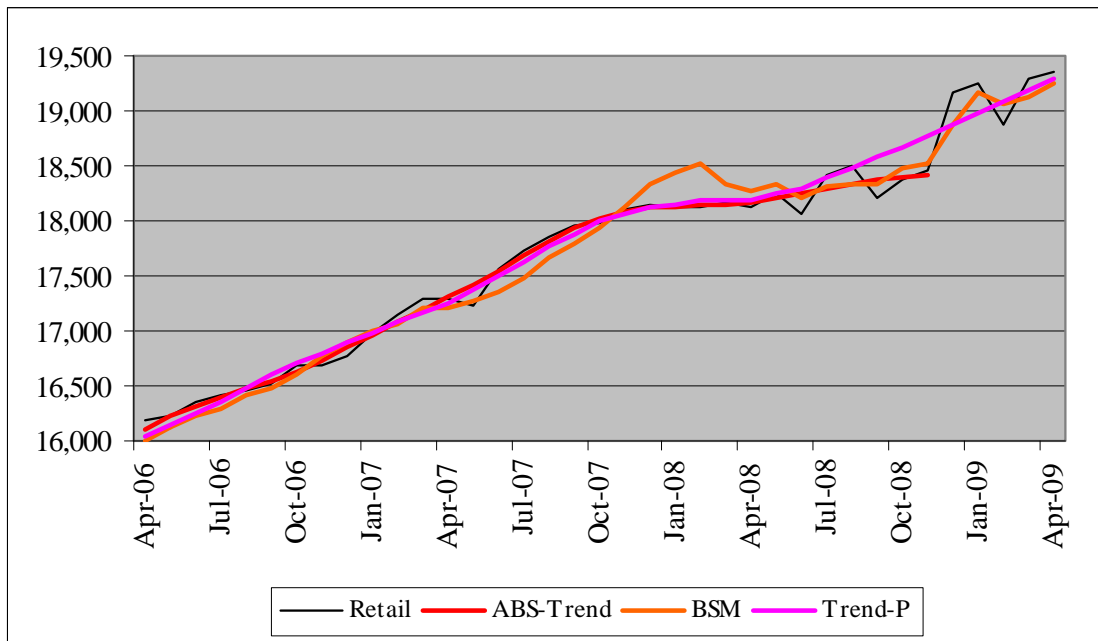
Source: ABS 8501.0 Retail Trade, Australia

In the next section we augment the figures with additional estimates of the trend.

### 3.0 Results

We calculate two measures of trend. The first is a Basic Structural Model (BSM) – this technique is associated with Professor Andrew Harvey of Cambridge University – and the second trend is a General Polynomial Function (Trend-P). Additional details of these calculations can be found in the appendix. We then plot these trend figures along with the ABS data. The results of this exercise can be seen in figure four.

Figure Four: Retail Sales (seasonally adjusted) and Trends April 2006 – April 2009



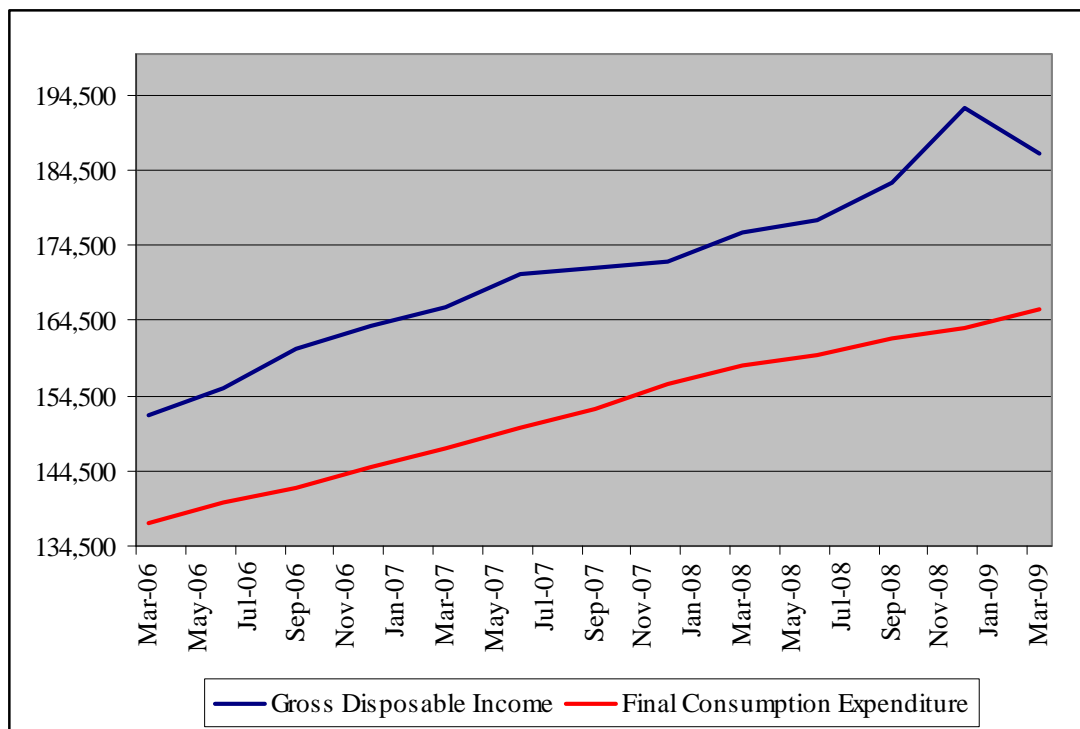
Source: ABS 8501.0 Retail Trade, Australia, Author calculations

It is no longer the case that the Retail Sales figures appear to massively exceed the Trend. Rather the figures now appear to be reverting to Trend. In other words, there is nothing unusual about the recent increases in Retail Sales. In contrast to the view that an additional \$1.8 billion were spent prior to April this year, we calculate that an additional \$441 million (BSM) and \$512.5 million (Trend-P) was spent over the period from December 2008 to April 2009. This sum of money, relative to the government spending on households, is a very small sum indicating that the stimulus package has not led to additional spending.

It is possible to argue that our trend lines are biased upwards by the stimulus package itself and consequently it is unsurprising that we find the results that we do. It is possible, however, to calibrate our estimates by comparing household income and household expenditure data – also available from the ABS. We plot that data in figure five.<sup>3</sup>

<sup>3</sup> We thank Alex Robson for the suggestion.

Figure Five: Household Income and Consumption Expenditure (March 2006 – March 2009)



Source: ABS 5206.0 Australian National Accounts: National Income, Expenditure and Product Table 14

The increase in household Gross Disposable Income can be attributed to the government’s stimulus package. On the other hand, there is no notable increase in household consumption expenditure. This suggests that there should be no unusual changes in retail sales within the economy. The results in figure four are consistent with our trends shown in figure three and inconsistent with the trend shown in figure two.

## 4.0 Conclusion

The federal government has dramatically increased fiscal expenditure since September 2008. In part this is to stimulate the economy in order to reduce the effects of the global financial crisis. Rather than cut taxes, for example, the government chose to stimulate the demand side of the economy. There has been some debate as to whether that approach has worked or even could work. The major question is whether individuals would quickly spend the stimulus money or whether they would save the money. In this paper we suggest that the recent (apparent) increase in retail sales does not necessarily imply that the government stimulus package has worked. Rather those Retail Sales figures are not very different from estimates of Trend. Furthermore, our analysis is consistent with ABS data showing no unusual pattern in household expenditure.

## 5.0 Appendix

The Basic Structural Model (BSM) belongs to a class of time series models often referred to as state space models. These types of models are often used to model and forecast time series. As they model the unobserved components (i.e., trend and seasonal components) of a time series explicitly they are considered to have many advantages over traditional models, these include transparency and generality.

The Basic Structural Model has been described as a *stochastic modification* of a linear trend model. Essentially, rather than constraining the change from one period to the next to be fixed, the model allows the change to vary. The estimate of the trend in this model can also be described as being locally linear.

The Trend-P model is another way to decompose a series into its latent components. Specifically, for a given location 'x', it fits a polynomial regression to a set of values in the neighbourhood of 'x'.

As in the previous case, this method can be considered to be a modification of the linear trend model as it does not constrain the change from one period to the next to be fixed.

### **Summary**

The trend estimates presented in figure four were calculated using all available data beginning in April 1982. They are a function of the seasonal retail turnover variable provided by the Australian Bureau of Statistics. In-built functions in the statistical software program *R* were used to generate the estimates presented.

The trend estimation techniques used in this paper are used extensively by econometricians and statisticians. They can be considered as being the main-stream alternatives to the moving average approach employed by the ABS.

For a more technical description of the methodologies please contact the authors or refer to the *R*-Help guide.