



OECD SHORT-TERM ECONOMIC STATISTICS WORKING PARTY
(STESWP)

The proposed use of EFTPOS data in official statistics

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Submitted to the Working Party under item 2 of the draft agenda

Meeting:
26 – 28 June 2006

Franqueville Room
OECD Headquarters, Paris
Starting at 9:30 a.m. on the first day

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Prepared by Jude Hughes

The use of electronic funds transfer at point of sale (EFTPOS) is common throughout New Zealand and its use continues to increase. While the New Zealand economy is not large by world standards, the take-up rate for EFTPOS has been so fast that the country is recognised as the leader in its use, with one terminal for every 34 persons (reported for 2004). By comparison, Australia has one terminal for every 43 persons, the United States has one for every 61 persons, and France one for every 59 persons¹. While most countries have multiple switching houses and dedicated credit card networks, New Zealand has just two central switching houses which are owned by the five major trading banks, and clear all electronic transactions, including department store charge cards.

New Zealand's high usage of EFTPOS and its unique model for clearing electronic transactions presented an opportunity for Statistics New Zealand in conjunction with the Reserve Bank, to work with the two switching houses to use the data for official statistics. This paper presents the potential uses and benefits of the data, an analysis of the data, and issues around securing supply.

Potential uses and benefits of the data

Early indicator of retail activity (Stage 1)

EFTPOS data is a timely and cost effective data source that covers a significant proportion of spending in the retail sector. EFTPOS data provides a timelier indicator of retail activity than is currently available from the Retail Trade Survey (RTS), which is published six weeks after the end of the reference month. By using EFTPOS data it is possible to publish an indicator of retail activity within two weeks of the end of the reference month. The publication of an early indicator series is the first stage of a four-stage project started in 2004 to explore the full potential of using this data.

The Reserve Bank has an interest in an indicator of retail activity primarily for forecasting purposes in relation to monetary policy formulation. Meeting an explicit inflation target is economic policy in New Zealand which brings into focus short-term indicators that establish where we are in the business cycle. The data is to be used as an indicator of economic activity (consumption), feeding into Official Cash Rate (OCR) or interest rate deliberations.

Services (Stage 2)

The services sector is the fastest growing sector in the New Zealand economy, accounting for approximately 65 percent of New Zealand's GDP. Currently Statistics NZ does not have access to timely information for the services sector, apart from distributive trade surveys (retail and wholesale). EFTPOS data can provide monthly information for a number of other services without the need for additional surveys. As a few examples, EFTPOS data provides information on travel agents; medical, dental and veterinary services; and sporting and

¹New Zealand source; Bankers Association website www.nzba.org.nz. Other countries source; CPSS Red Book Statistical Update Publication no.74 March 2006.

recreational services. The second stage of our project is investigating the potential for EFTPOS data to enhance the range of service statistics available for use in GDP.

Regional and Tourism Spending (Stage 3)

The Balance of Payments measures New Zealand's transactions with the rest of the world. One of these transactions is spending in New Zealand by overseas visitors. EFTPOS data can provide a proxy for this, based on spending by cardholders in New Zealand.

Currently, Statistics NZ conducts a monthly census of short-term accommodation providers for the Ministry of Tourism. The annual burden for respondents in this collection is twice the annual burden of the Agricultural Census, although the Agricultural Census is only conducted every five years. As a result, Statistics NZ has been working with the Ministry of Tourism (since 2004), to find a solution that balances user needs while reducing the heavy burden for respondents. EFTPOS data has the potential to provide an alternative to the current Accommodation Survey through measuring regional spending by overseas and domestic cardholders.

Retail (Stage 4)

Part of the GDP measure is Household Consumption Expenditure (HCE) which includes retail trade activity measured using the monthly RTS. The RTS is about 40 percent of HCE. EFTPOS data has the potential to provide more information on HCE as it is predominantly used by households. We are investigating the potential use of EFTPOS data to replace parts of the monthly RTS.

Quality of the data

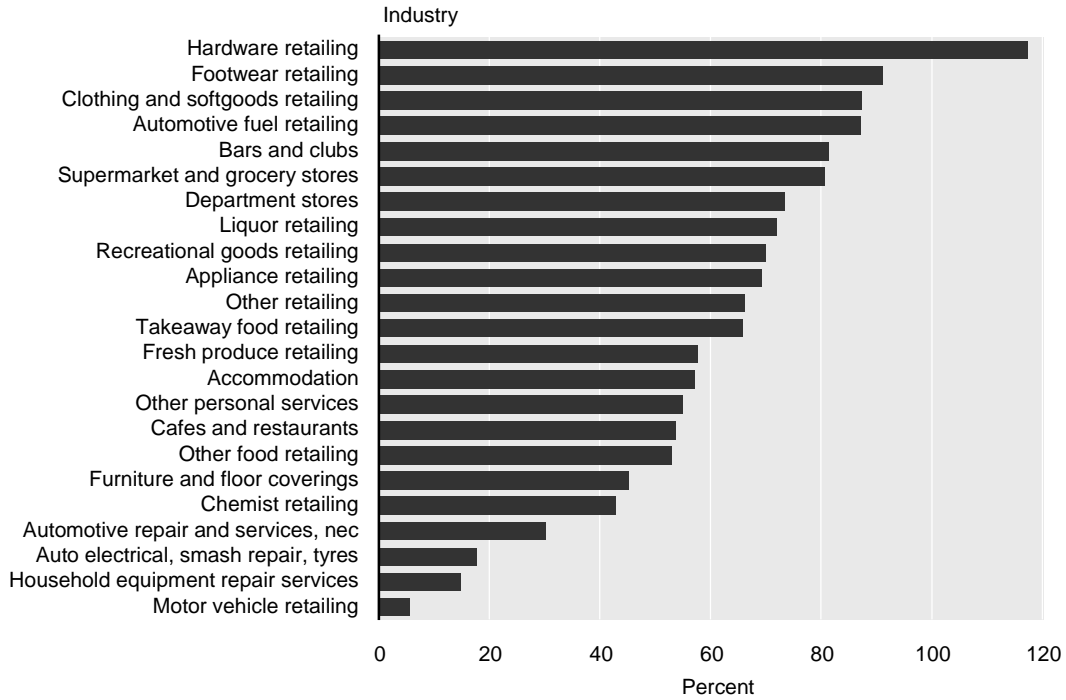
To test the feasibility of using the EFTPOS data as an indicator of retail activity we compared the data to the RTS. Using a single time series from August 2001, EFTPOS data (for retail classified industries only) series were compared with the RTS to determine if they are sufficiently similar for EFTPOS data to be used as a leading indicator of retail activity. Regression analysis was performed and the results were promising, producing a regression model with a good fit ($R^2 = 93$ percent) and significant coefficients. However, some of the assumptions underlying the method of least squares (normality of the residuals and a linear relationship between the variables) were violated. The problem of non-linearity between the RTS and EFTPOS data was thought to have occurred due to the increasing use of EFTPOS over time.

There are a few industries showing a decrease in EFTPOS usage although the increases are more significant. These decreases are possibly due to some discrepancies in industry classifications between the RTS and EFTPOS merchants. Both switching houses code their retail merchants to an industry code loosely based on New Zealand Standard Industrial Classification pre-1996 (NZSIC), which aligns to ISIC (International Standard Industrial Classification). The RTS uses ANZSIC 1996 which is a New Zealand and Australian use industrial classification based on ISIC. It may be possible to resolve these classification issues with the receipt of finer-level data (daily data by merchant) from the switching houses. This is currently under negotiation with the switching houses. Currently we receive monthly data summed by industry.

Store-types have quite different usage or penetration of EFTPOS as a means of payment. Usage is defined as the uptake of EFTPOS as a means of payment by the consumer and penetration is defined as the availability of the EFTPOS terminal within store-types. We are not able to separate usage and penetration effects in the data and the terms are used interchangeably.

The graph below illustrates the differing rates of usage or penetration. Problems with the classifications are clearly illustrated in the hardware store-type which shows penetration over 100 percent. Some enterprises are classified to wholesaling by Statistics New Zealand whereas the switching houses classify all hardware store-types to retailing.

Usage Rates of ETD by RTS Industry
Average over July–December 2005



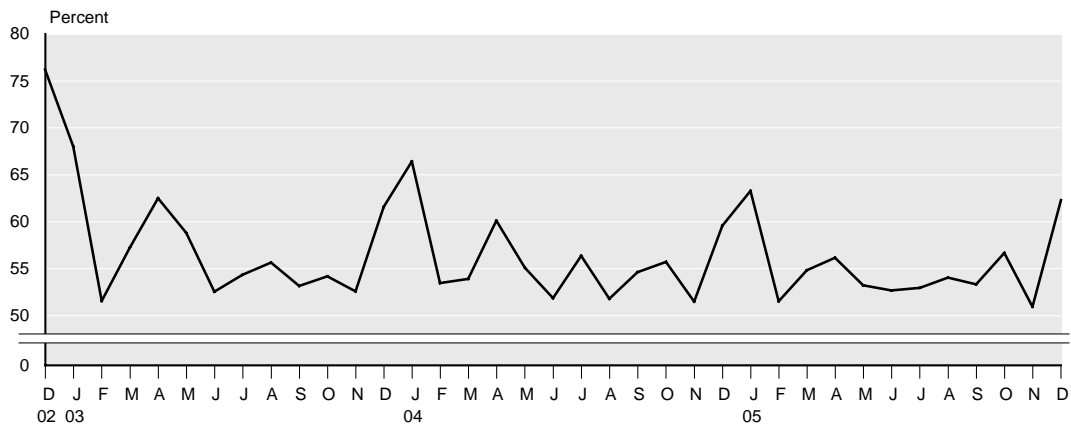
Monthly penetration rates were found to show some volatility. Interestingly, we found that supermarkets had a lower usage rate over the Christmas period than other times of the year. Christmas clubs and the payout of holiday pay at this time of the year are thought to be contributing factors to less usage of EFTPOS. Christmas clubs are a scheme where supermarkets allow vouchers to be purchased during the year, at a discounted rate for use at Christmas. However these patterns remain counter-intuitive and worthy of further investigation if finer-level data becomes available.

Changes in Penetration
Supermarkets and grocery stores



Accommodation provides a more intuitive pattern, with peaks in usage at the main summer holiday period – Christmas.

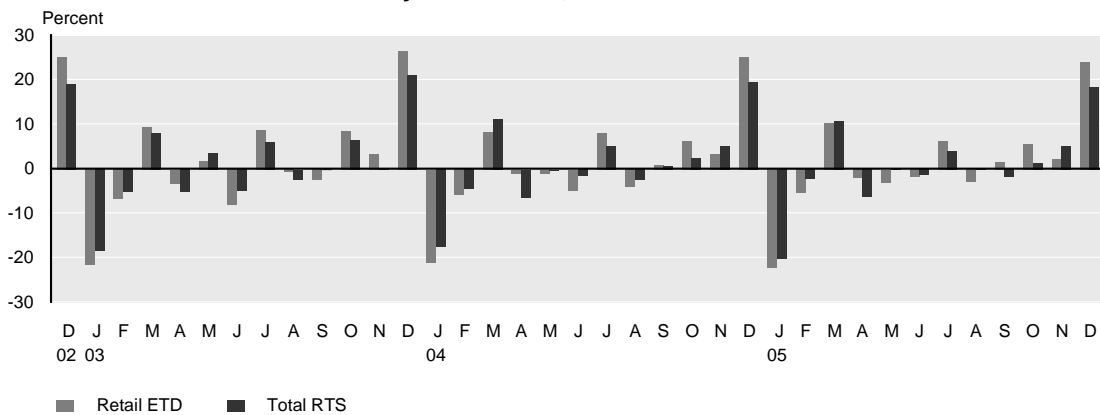
Changes in Penetration
Accommodation



Penetration has been increasing over time, increasing from a 52 percent to a 65 percent penetration rate over the past four years. Penetration rates are calculated by dividing EFTPOS data by RTS data for the same period for each store-type. Differentiating this from real growth in retail sales over time remains a key issue with the data. For the early indicator that we are proposing to publish in August we are conducting focus groups on how a comparison between the two trends (RTS and EFTPOS) will aid interpretation.

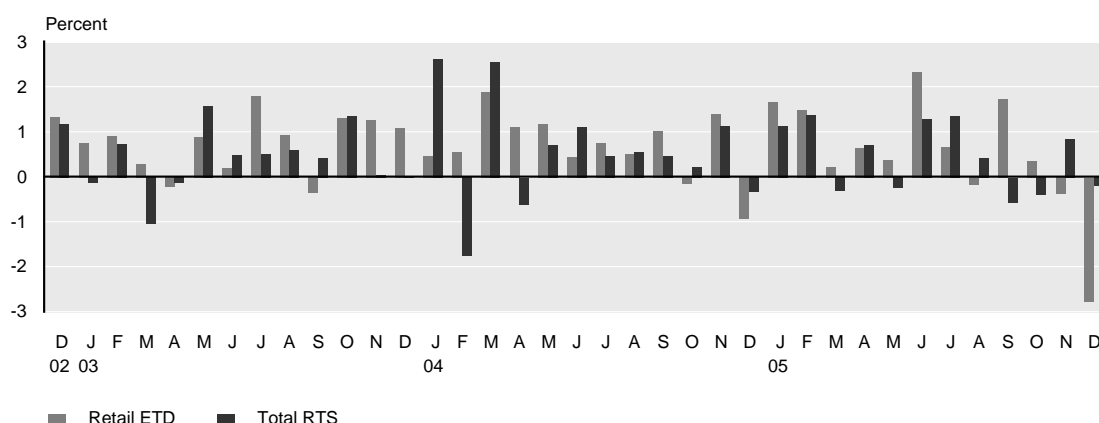
A comparison of the movements between the Retail EFTPOS data and the RTS show that the series exhibited similar monthly movements.

Actual Monthly Movements, Retail ETD and Total RTS



Once the EFTPOS data is seasonally adjusted the movements are still similar however the magnitudes differ significantly. While the seasonal adjustment for the EFTPOS series is of a good quality, the fluctuations in the usage or penetration each month (as illustrated in the supermarket and accommodation examples) and the faster rising trend, mean that a comparison with the RTS is not appropriate. The most common use of the series would be as an early indicator for retail, but when users were shown these results they commented that they would not find the series useful. At this stage we do not plan to publish a seasonally adjusted early indicator.

Seasonally Adjusted Monthly Movements, Retail ETD and Total RTS



Securing the supply of data

Since early 2004, the switching houses have been voluntarily supplying some data on a monthly basis, after seeking permission from each of their shareholders through the board of directors. The data requested is at an aggregated level comprising of the volume and value of transactions, summarised by:

- Card type (debit, credit, charge)
- By merchant classification code (industry classification)
- By region
- Cash out
- Purchases by overseas card holders identified separately.

Our preliminary analysis of the data indicated some quality issues with the inconsistent classification of the data, as demonstrated in the hardware example. Currently, both switching houses code their retail merchants to an industry code loosely based on New Zealand Standard Industrial Classification pre-1996 (NZSIC) which aligns to ISIC (International Standard Industrial Classification). In order to address these quality issues, we sought to get daily transaction data aggregated by the merchant (unit record data). This is not the cardholder information, but the EFTPOS transactions summed by merchant on a daily basis.

In getting daily data we could also seek to meet the needs of the Reserve Bank which requires the data on a more frequent basis than monthly to meet their needs for monetary policy setting.

In addition, we saw the potential to analyse trading day factors, do economic impact analysis and supply small area data, subject to confidentiality constraints. This approach to the switching houses raised, not previously expressed concerns around the ownership of the data, and the perception of supplying confidential information to government, or 'big brother'.

Statistics NZ was also concerned that the current voluntary collection arrangement will not provide sufficient security of data supply to meet the ongoing needs of Statistics NZ for the regular production of statistics, and the Reserve Bank in monetary policy setting. Three alternatives for collecting the data were examined:

- (i) Voluntary supply - the current arrangement
- (ii) Compulsory supply - under section 36 of the Reserve Bank Act
- (iii) Compulsory supply under the Statistics Act.

(i) Voluntary collection - the current arrangement

The advantage with the current voluntary arrangement is that the share-holding banks and the switching houses have agreed to this arrangement and are earnest in their desire to provide the data as a public good. However, we have yet to test this goodwill with a request to publish the data. With only two enterprises supplying the data, the information is easily identifiable and their express permission to publish statistics is required under the Statistics Act 1975, which prohibits the identification of an individual's information. Once Statistics NZ is in possession of voluntarily supplied data it is then covered by the usual secrecy and publication provisions, as is the case with compulsorily acquired data.

While we have written agreements, they have no legal standing as contracts unless a consideration is given in exchange for the data. We are reluctant to enter into a commercial contract where we may be placed in the future position of paying increasingly large amounts of money for data to continue producing official statistics. Statistics NZ does not pay for data as this would contradict the intent of the Statistics Act 1975, but in conjunction with the Reserve Bank, we have offered to assist with any programming costs to extract the data.

Before we proceed with investment in infrastructure and the commitment to producing on-going official statistics, we sought a legal standing for securing the data and explored the other options – specifically the Reserve Bank Act 1985 and the Statistics Act 1975. The analysis is set out below.

(ii) Compulsory collection under the Reserve Bank Act

We sought legal opinion on whether we could acquire the data under the section 36 of the Reserve Bank Act and found that this section could not be applied to the switching houses, but could be used indirectly through the shareholder banks.

A recently enacted section (S156C) of the Reserve Bank Act that gives authority to manage the financial stability of the banking system was considered. However no policies have yet been formed and legal opinion was that only a high level of aggregated data could be collected for this purpose. This level of aggregation would not meet the needs of the Reserve Bank for monetary policy setting nor Statistics NZ's for official statistics.

(iii) Compulsory collection under the Statistics Act

After much debate and on advice from legal counsel we determined that the best way to secure data supply was to compulsorily acquire it under the Statistics Act 1975. This would require a legal obligation on the switching house. However, we were aware that if the switching houses challenged us in court, it could damage our reputation with the wider New Zealand public. And while we may enforce the supply of data, the switching houses could prevent any publication of the data. Under our own confidentiality policies we can only publish with their written permission as there are only two companies involved.

We sought to negotiate with the switching houses to collect the data as a formality rather than something that is legally exercised. While both switching houses initially agreed to this approach for the aggregate data (monthly summed by industry), the larger switching house has now raised concerns about supplying unit record data. This is due to issues around the ownership of the data. Their legal advice highlights that various parties can claim ownership of various parts of the data, with no one party having clear ownership. The other issues raised were around our privacy legislation, where the use of an individual's information is governed by the Privacy Act 1993, the perception of supplying information to government or 'big brother' and the potential loss of value to the company due to the commercial value of the data.

The Privacy Act 1993 promotes an individual's privacy and establishes principles with respect to the collection, use, and disclosure, by public and private sector agencies, of information

relating to individuals. The switching houses were concerned about the status of a sole trader, the most common small business in New Zealand. Sole traders are not in a legal partnership nor are they a limited liability company. While Principle 11 of the Privacy Act 1993 prohibits the disclosure of information there are exceptions. These are when the information is used for statistical and research purposes, as the Privacy Act was drafted to work with the Statistics Act 1975. We have therefore been able to allay the switching houses concerns on this front.

In regard to the ownership of the data, the Statistics Act 1975 does not concern itself with the data ownership, but is able to place a legal onus on the recipient of the enquiry to provide that information. There are already clear precedents for this type of scenario, although they are government to government and not private to government. For example, the collection of imports and exports data is provided to the New Zealand Customs Service (NZCS) by exporters and importers for clearance of goods, but is requested by us from the NZCS for statistical purposes.

The 'big brother' concern expressed by the switching house is our greatest challenge, and not one that can be solved with redress to legislation. The switching house sees that they have an overarching requirement to protect the success of EFTPOS and the choice of EFTPOS as a preferred payment instrument. They want to build on the success of EFTPOS and in no way damage the market's perception of this service.

We believe that we can generate some positive public relations gain for both of the switching houses as by using their data we can significantly reduce the compliance burden on their client base – the retailers. In addition, the use of the data will provide good quality information to enhance the Reserve Bank's decision making in setting the OCR which is a key area of trading for the major banks. There are benefits to the wider official statistics system, with the ability to enhance not just GDP and BOP statistics but also provide valuable regional information for use in regional GDP estimates and regional tourism spending.

The concerns around the potential loss of value to the company due to the commercial value of the data were easily dispelled. Statistics NZ's main aim is to use the data to reduce the cost of producing official statistics and to improve timeliness. We are not seeking to sell the data to users in competition with the switching houses.

Future work

Statistics NZ will seek to publish an indicator series in August as a leading or early indicator for the RTS. In addition, we continue to explore the use of the aggregated data in enhancing the range of service statistics, as a better gauge of domestic and tourism spending, as an indicator of regional retail spending and as a more comprehensive measure of HCE.

We are still exploring the acquisition of unit record data as a longer-term strategy. And working in partnership with business, and managing the perceptions of the New Zealand public in the supply of this data to us will continue to challenge us.