6413.0

Australian Bureau of Statistics

Information Paper

Experimental Price Indexes for Financial Services

1998 to 2003

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New Issue

Information Paper

Experimental Price Indexes for Financial Services

1998 to 2003

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AUSTRALIAN BUREAU OF STATISTICS

EMBARGO: 11.30AM (CANBERRA TIME) MON 12 JUL 2004

ABS Catalogue No. 6413.0

Produced by the Australian Bureau of Statistics

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PREFACE

For some years now there has been considerable community interest in the prices paid by households for financial services. An outcome of a review of the Consumer Price Index (CPI) undertaken in 1997 was a commitment by the Australian Bureau of Statistics (ABS) to develop a price index for financial services for eventual inclusion in the CPI. This index was to be designed to cover the explicit fees and charges paid by households as well as any indirect costs embodied in interest rate margins.

This paper presents an experimental index measuring price changes for some of the most significant financial services acquired by households — deposit and loan facilities provided by financial institutions and services associated with the acquisition and disposal of shares and real estate. The index also covers taxes and stamp duties levied on the relevant transactions. It represents the first attempt by a national statistical agency to construct such a comprehensive measure of price change for financial services.

The ABS could not have completed this project without the cooperation of members of the Australian financial services industry. The ABS would like to take this opportunity to thank those businesses and individuals for their considerable contribution of time and other resources.

The ABS intends to update these indexes quarterly and publish them as an experimental series (in cat. no. 6413.0.55.001) prior to including them in the CPI from the introduction of the 15th series CPI in September quarter 2005. However, because it is important that any decision to substantially alter the composition of the CPI is well understood and supported by the majority of users, the ABS will conduct seminars in late July and early August 2004 in all capital cities to provide opportunities for readers to learn more about the issues involved in constructing these measures. Queries or comments can also be addressed to:

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ABBREVIATIONS

ABS	Australian Bureau of Statistics
ATM	automatic teller machine
BAD	Bank Account Debits Tax
CPI	Consumer Price Index
EFTPOS	electronic funds transfer at point of sale
FID	Financial Institutions Duty
SNA93	System of National Accounts 1993
TNTS	The New Tax System

CHAPTER 1 INTRODUCTION

INTRODUCTION

Although households are significant users of financial services, these services have not been included in the CPI to date because the construction of comprehensive, reliable measures of price change for them poses substantial conceptual and methodological problems. Nevertheless, a review of the CPI in 1997[1] led to the ABS commencing a research program aimed at developing a measure suitable for inclusion in the CPI.

To be consistent with the principal purpose of the Australian CPI as a measure of price inflation for the household sector as a whole, the objective was to construct a price index covering all those services acquired by households in relation to the acquisition, holding and disposal of financial and real assets. It was also considered essential that the measures were able to reflect changes in the total cost of any service and therefore they needed to cover both those fees and charges levied directly on households and those paid indirectly via differences in interest rates on loans and those on deposits ("interest rate margins").

While the ABS could have moved relatively quickly to construct a measure that only covered directly levied fees and charges this option was rejected on the grounds that such a measure was likely to significantly overstate the real rate of price change for financial services — particularly those acquired from deposit taking institutions (banks, building societies, credit unions etc.). This view was based on an assessment that the Australian financial services sector was embarking on a long-term restructuring that would result in a shift towards direct fees and charges at the expense of the indirect. In other words, it was believed that the 'prices' of direct fees and charges would increase more rapidly than the 'prices' of indirect fees.

The construction of a measure of price change that includes both the direct and indirect charges is not a straightforward process. However the ABS believes that it has now solved the methodological problems, and the techniques and an experimental index series are presented in this paper. The indexes are presented in Chapter 2 while Chapters 3 and 4 are devoted to discussion of the techniques used to calculate the price measures for two of the more complex components — deposit and loan facilities (Chapter 3) and real estate agency services (Chapter 4). Chapter 5 presents proposals for the future.

OTHER MEASURES OF PRICE CHANGE FOR FINANCIAL SERVICES

A measure of price change for financial services consumed by households can be derived from the national accounts by comparing the current price and chain volume estimates of household final consumption expenditure on financial services. However, due to differences in coverage between the national accounts measures and these experimental indexes, a comparison of these alternative measures of price change is not straightforward.

1 ABS 1998

OTHER MEASURES OF PRICE CHANGE FOR FINANCIAL SERVICES *continued*

The volume estimates of household final consumption expenditure on financial services (other than insurance services) are currently derived by deflating the current price estimate with an implicit price deflator for the output of financial services. The availability of these new experimental price indexes has the potential to significantly upgrade the quality of the volume estimates in the national accounts. They could also have the potential to improve more generally the volume estimates for finance and insurance industry gross value added and the ABS will be investigating the opportunities for making such improvements.

The Reserve Bank of Australia conducts an annual survey of the fee income from commercial banks' Australian operations. The latest survey is published as *Banking Fees in Australia* in the May 2004 edition of the Reserve Bank's *Bulletin*.

The Reserve Bank's approach and objectives differ in many respects from the ABS's. In particular the Bank has not attempted to separate price and volume effects in its published results, so it is difficult to compare our results with the Bank's. Towards the end of the latest article the Bank says that

> the increase in bank fees has not offset the benefit that banks' customers have received from the reduction in banks' interest margins since the mid 1990s.

The ABS time series does not start until 1998, so any earlier reduction in bank interest margins will not be reflected in the ABS data.

CHAPTER 2 THE EXPERIMENTAL INDEXES

SCOPE AND COVERAGE

There are many services acquired by households that have the potential to be regarded as financial services. Some common examples are: financial advice; currency exchange; deposit and loan facilities; services provided by fund managers, life insurance offices and superannuation funds; stockbroking services; real estate agency services etc. The current experimental index has been restricted to those for which the ABS has been able to construct reliable measures of price change, namely:

- deposit and loan facilities provided to households by deposit-taking institutions
- services provided by stockbrokers and real estate agencies in respect of the acquisition and disposal of equities (shares) and real estate.

The ABS has yet to turn its attention to how best to construct price indexes for services provided by fund managers, life insurance offices and superannuation funds. The complexities of the charging arrangements for services provided by these organisations are such that a satisfactory solution will require a major research effort. However, the services covered by the current experimental index are significant in terms of the aggregate volume of financial services used by households and are used by virtually all private households.

RESULTS

Table 2.1 presents the experimental index numbers for each of the eight capital cities and the weighted average of the eight capital cities from September quarter 1998 to December quarter 2003. Table 2.2 presents percentage changes for financial years, from the corresponding quarter of the previous year and from the previous quarter.

2.1 FINANCIAL SERVICES, Index numbers(a)

Period	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
1998–99	100.4	99.9	100.3	100.3	101.9	100.2	100.4	100.3	100.4
1999–2000	103.7	103.0	104.0	103.0	105.9	103.2	104.1	103.4	103.7
2000–01	112.4	111.7	113.7	111.8	114.9	112.7	113.0	112.5	112.6
2001–02	109.3	110.0	114.5	108.8	112.9	110.1	110.7	109.9	110.4
2002–03	112.5	115.0	120.3	114.0	118.7	116.2	116.5	116.2	115.0
1998									
September	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
December	100.7	99.7	100.6	100.7	102.6	100.5	100.6	100.6	100.6
1999									
March	100.2	99.5	100.0	99.9	102.3	99.8	100.2	100.1	100.2
June	100.7	100.2	100.5	100.4	102.8	100.4	100.8	100.6	100.7
September	101.7	101.3	102.0	101.5	103.8	101.8	102.1	101.7	101.9
December	102.9	102.2	103.0	101.9	105.2	102.2	103.1	102.6	102.9
2000									
March	104.0	103.0	104.1	103.1	106.1	103.2	104.3	103.5	103.9
June	106.2	105.4	106.7	105.5	108.6	105.6	106.9	105.9	106.2
September	108.3	107.5	109.2	107.9	110.8	108.3	109.3	108.3	108.4
December	112.5	112.0	114.0	112.0	115.1	113.1	113.3	112.9	112.8
2001									
March	114.8	114.2	116.5	114.4	117.3	115.6	115.5	115.2	115.1
June	113.9	113.1	115.1	113.0	116.5	113.8	114.0	113.7	114.0
September	111.4	111.0	114.5	109.7	114.3	110.8	111.0	111.2	111.8
December	110.2	109.9	114.9	108.8	113.0	110.3	110.8	109.8	110.8
2002									
March	107.4	108.8	113.3	107.2	111.6	108.6	109.4	108.4	108.9
June	108.0	110.4	115.1	109.3	112.6	110.7	111.4	110.1	110.1
September	110.9	113.6	118.7	112.6	116.0	114.2	114.7	113.7	113.3
December	111.3	113.8	119.0	112.8	118.0	114.6	115.2	115.1	113.8
2003									
March	112.8	115.3	120.7	114.3	119.4	116.8	117.0	116.8	115.3
June	115.0	117.3	122.8	116.3	121.3	119.1	119.0	119.1	117.4
September	115.6	118.2	123.7	116.8	122.1	119.8	120.0	119.9	118.2
December	116.6	118.6	124.8	117.3	122.9	120.8	120.7	120.7	118.9

(a) Base of each index: September Quarter 1998 = 100.0.

2.2 FINANCIAL SERVICES, Percentage changes

Period	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
PERCENTAGE CHANGE (from previous financial year)									
1999–2000	3.3	3.1	3.7	2.7	3.9	3.0	3.7	3.1	3.3
2000–01	8.4	8.4	9.3	8.5	8.5	9.2	8.5	8.8	8.6
2001–02	–2.8	–1.5	0.7	–2.7	–1.7	–2.3	–2.0	–2.3	–2.0
2002–03	2.9	4.5	5.1	4.8	5.1	5.5	5.2	5.7	4.2
PERCENTAGE CHANGE (from corresponding quarter of previous year)									
1999									
September	1.7	1.3	2.0	1.5	3.8	1.8	2.1	1.7	1.9
December	2.2	2.5	2.4	1.2	2.5	1.7	2.5	2.0	2.3
2000									
March	3.8	3.5	4.1	3.2	3.7	3.4	4.1	3.4	3.7
June	5.5	5.2	6.2	5.1	5.6	5.2	6.1	5.3	5.5
September	6.5	6.1	7.1	6.3	6.7	6.4	7.1	6.5	6.4
December	9.3	9.6	10.7	9.9	9.4	10.7	9.9	10.0	9.6
2001									
March	10.4	10.9	11.9	11.0	10.6	12.0	10.7	11.3	10.8
June	7.3	7.3	7.9	7.1	7.3	7.8	6.6	7.4	7.3
September	2.9	3.3	4.9	1.7	3.2	2.3	1.6	2.7	3.1
December	–2.0	–1.9	0.8	–2.9	–1.8	–2.5	–2.2	–2.7	–1.8
2002									
March	–6.4	–4.7	–2.7	–6.3	–4.9	–6.1	–5.3	–5.9	–5.4
June	–5.2	–2.4	0.0	–3.3	–3.3	–2.7	–2.3	–3.2	–3.4
September	–0.4	2.3	3.7	2.6	1.5	3.1	3.3	2.2	1.3
December	1.0	3.5	3.6	3.7	4.4	3.9	4.0	4.8	2.7
2003									
March	5.0	6.0	6.5	6.6	7.0	7.6	6.9	7.7	5.9
June	6.5	6.2	6.7	6.4	7.7	7.6	6.8	8.2	6.6
September	4.2	4.0	4.2	3.7	5.3	4.9	4.6	5.5	4.3
December	4.8	4.2	4.9	4.0	4.2	5.4	4.8	4.9	4.5
PERCENTAGE CHANGE (from previous quarter)									
1998									
December	0.7	–0.3	0.6	0.7	2.6	0.5	0.6	0.6	0.6
1999									
March	–0.5	–0.2	–0.6	–0.8	–0.3	–0.7	–0.4	–0.5	–0.4
June	0.5	0.7	0.5	0.5	0.5	0.6	0.6	0.5	0.5
September	1.0	1.1	1.5	1.1	1.0	1.4	1.3	1.1	1.2
December	1.2	0.9	1.0	0.4	1.3	0.4	1.0	0.9	1.0
2000									
March	1.1	0.8	1.1	1.2	0.9	1.0	1.2	0.9	1.0
June	2.1	2.3	2.5	2.3	2.4	2.3	2.5	2.3	2.2
September	2.0	2.0	2.3	2.3	2.0	2.6	2.2	2.3	2.1
December	3.9	4.2	4.4	3.8	3.9	4.4	3.7	4.2	4.1
2001									
March	2.0	2.0	2.2	2.1	1.9	2.2	1.9	2.0	2.0
June	–0.8	–1.0	–1.2	–1.2	–0.7	–1.6	–1.3	–1.3	–1.0
September	–2.2	–1.9	–0.5	–2.9	–1.9	–2.6	–2.6	–2.2	–1.9
December	–1.1	–1.0	0.3	–0.8	–1.1	–0.5	–0.2	–1.3	–0.9

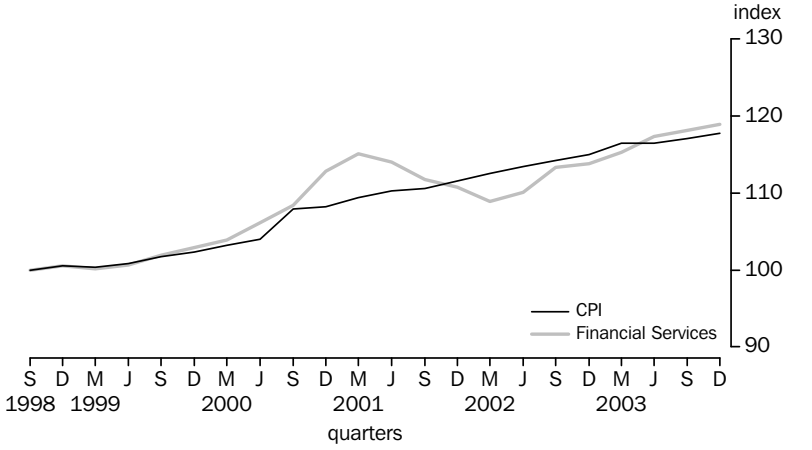
2.2 FINANCIAL SERVICES, Percentage changes *continued*

Period	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
	PERCENTAGE CHANGE (from previous quarter)								
2002									
March	–2.5	–1.0	–1.4	–1.5	–1.2	–1.5	–1.3	–1.3	–1.7
June	0.6	1.5	1.6	2.0	0.9	1.9	1.8	1.6	1.1
September	2.7	2.9	3.1	3.0	3.0	3.2	3.0	3.3	2.9
December	0.4	0.2	0.3	0.2	1.7	0.4	0.4	1.2	0.4
2003									
March	1.3	1.3	1.4	1.3	1.2	1.9	1.6	1.5	1.3
June	2.0	1.7	1.7	1.7	1.6	2.0	1.7	2.0	1.8
September	0.5	0.8	0.7	0.4	0.7	0.6	0.8	0.7	0.7
December	0.9	0.3	0.9	0.4	0.7	0.8	0.6	0.7	0.6

RESULTS *continued*

Over the 21 quarters from September quarter 1998 to December quarter 2003, the index for the weighted average of the eight capital cities increased by 18.9%. By way of comparison, the CPI increased by 17.7% over the same period. Although the longer-term rates of change are very similar, shorter-term differences can be greater. The following chart presents index numbers for financial services and the CPI (converted to a base of September quarter 1998=100.0).

2.3 INDEX NUMBERS, Weighted average of eight capital cities



It can be seen that the behaviour of the two series is broadly similar up to March quarter 2000 and again from September quarter 2002. The intervening period was significantly influenced by the introduction of The New Tax System (TNTS) and related changes (such as the elimination of some taxes and charges levied by state and territory governments on financial services).

CHAPTER 3 DEPOSIT AND LOAN FACILITIES

DEPOSIT AND LOAN FACILITIES

This chapter describes the conceptual and methodological issues relevant to the construction of price indexes for deposit and loan facilities. Price indexes relating only to deposit and loan facilities are not available for separate publication. They are incorporated in the aggregate series for financial services.

In order to construct an overall measure of price change for deposit and loan facilities there are two key factors that need to be addressed concerning the ways in which these services are charged for. Deposit taking institutions earn income by lending funds at a higher rate of interest than they pay on deposits (the difference being referred to as "interest rate margins") and by charging explicit fees for account keeping services and/or certain transactions.

To the extent that income from interest margins is obtained from households, it is legitimate to regard that amount as representing a payment by households for the services they obtain. The difficulty is that these interest rate margins are not directly observable. While the explicitly charged fees are observable, the impact of these on individual households can vary significantly depending on factors such as the type of account, the frequency of particular transaction types, the account balance and the total volume of business that the customer conducts with the service provider.

The challenge confronting the ABS was to develop a methodology for measuring changes in the amounts payable as explicit fees and charges, the amounts payable as government taxes and charges, and the amounts payable as interest rate margins. The changes in all these elements then need to be combined to obtain the aggregate or net change in the prices of deposit and loan facilities.

CALCULATION OF MARGINS

The first problem to overcome was how to calculate the amounts paid as interest margins on any single product (or account provided by a financial institution). The 1993 System of National Accounts (SNA 93) recommends [6.125 and Annex III] that the value of services provided by means of interest rate margins be valued as the product of the balance on the account multiplied by the difference between the interest rate payable or receivable and a *reference rate* of interest. In concept, SNA 93 describes this reference rate as being a risk free or pure interest rate. This approach has the effect of valuing the service provided to a borrower as the difference between the amount of interest paid by the borrower and the (lesser) amount that would have been paid had the reference rate been used. The converse applies for depositors. Therefore, the price of the service per dollar borrowed is given by the difference between the interest rate paid by the borrower and the reference rate. For a depositor, it is the difference between the reference rate and the interest rate received by the depositor.

CALCULATION OF MARGINS *continued*

In practice, statisticians experience great difficulty in identifying an exogenous reference rate that does not also result in volatile and sometimes negative measures of these costs(as would occur if the reference rate lies above the lending rate or below the deposit rate). When valuing these services in the national accounts the ABS has adopted the practical expediency of setting the reference rate at the mid-point of the borrowing and lending rates[2].

To minimise problems with potential non-response and changes to industry structure, it was decided that a slight variation of the approach used in the national accounts would be adopted in the construction of the price indexes for financial services. A separate reference rate is calculated for each sampled service provider for these experimental indexes.

It is important to recognise that the reference rate is not intended to approximate a financial institution's 'cost of funds'. In the simplest case, where an institution's only source of funds is amounts on deposit, its cost of funds would equal the interest rate paid on deposits. Using this as the reference rate would result in the measurement of zero services being provided to depositors.

ESTIMATING BASE PERIOD EXPENDITURE

Estimating the base period value of expenditure on deposit and loan facilities, as required for weighting purposes, is a complex exercise. What follows is a simplified description of the general procedure.

The starting point was to select a sample of deposit taking institutions each of which was then approached to obtain information on balances, interest flows, fees and taxes by product and in aggregate for a full financial year. Interest flows (payments on deposit products and receivables on loan products) and balances were used to compute interest rates (or yields) at the individual product level and for deposits and loans in total. The reference rate was calculated as the mid-point of the rate paid on deposits and the rate earned on loans. The percentage margin on each product was calculated as described above and the dollar value of the margin computed. For all those products identified as being consumer products (as distinct from those used by businesses), the total receipts from households were computed by summing the margins, fees and taxes. The aggregate ratio of these receipts to total balances for the sampled institutions was applied to aggregate balances for all deposit taking institutions to derive a national estimate. The capital city level estimates were imputed by reference to aggregate data from the Household Expenditure Survey.

MEASURING PRICE CHANGE

The schedules used to determine the amounts payable as explicit fees and taxes are generally not linear in nature and tend to incorporate some form of step function. In other words, rather than setting a universally applied price per transaction, it is often the case that fees for certain types of transactions are only incurred after some threshold is breached (e.g. after say 4 transactions in a month or when account balances fall below some level). Furthermore, financial institutions often 'bundle' products together, with the price paid for particular products depending on the bundling arrangements. In these circumstances it is not possible to simply calculate an average price from observable

2 A reference rate determined in this way could be regarded as representing a market clearing rate (i.e. the rate that would have been struck in the absence of financial intermediaries by depositors dealing directly with borrowers).

MEASURING PRICE CHANGE *continued*

schedules. What would be required would be to price different bundles of each service, for example 3, 4, 5 and 6 over the counter withdrawals and derive an average across the different bundles and construct a measure of price change from the changes in this average over time.

However, there are several problems with this approach. Obtaining enough detailed information to construct sufficiently representative bundles of individual services attracting fees would be an expensive process and still subject to error. It would also not be able to account for cases where the fees (or taxes) vary with the value of the transaction or individual account balances or cases where rebates are applied against the total of all fees that would have been charged. For these reasons, the ABS believes that the only way to reliably measure changes in fees and taxes is to work with a sample of customer accounts.

The approach adopted is similar in principle to that used for components of the CPI. For each sampled institution (service provider) a sample of products was selected to represent each of the major product categories such as current accounts, savings and investment accounts, retirement accounts, housing and home equity loans, personal loans, and credit cards. The specific product selected from each group (e.g. the sampled home loan product) is assigned a weight to represent all the specific fees and taxes paid in respect of all housing loans provided by the relevant institution.

For each sampled product the institutions were asked to provide a sample of unidentifiable accounts for customers living in each of the eight capital cities. The sampled accounts have had all identifying information (e.g. customer names, addresses and account numbers) deleted and replaced with a simple sequential number. Each sampled account contains information that is similar to that included on the monthly statements received by customers with the exception that any identifying information (such as who a payment was made to or received from) has been removed. However, the value of any transaction and the type of transaction (cheque, automatic teller machine (ATM) withdrawal etc.) and running balances have been retained along with any other information that influences the determination of charges (such as a customer relationship value or a fee waiving flag). Each sampled account covers a full twelve months activity. All up, the ABS has sampled approximately 7,000 individual accounts for the purpose of compiling these experimental indexes. In aggregate these sampled accounts contain approximately three million transactions.

The ABS has built a computer system capable of emulating the charging regimes employed by financial institutions and the relevant taxing authorities. This enables the ABS to calculate the total amounts that would be paid in fees and taxes over a full year for each sampled account based on the currently prevailing fee and tax schedules. The use of a full year's activity in this way is consistent with the methodology used to measure price change for all items in the CPI, which is based on an annual quantity basket. However, in order to preserve the real values of the individual transactions (or, in other words, the underlying quantities), the values of the transactions need to be updated each period to reflect changes in the general price level before applying the current period fee schedules. The all groups CPI is used for this purpose.

MEASURING PRICE CHANGE *continued*

The process can be described in the following way. Each quarter the transaction values in the sampled accounts are updated using a four-term moving average of the CPI lagged by one quarter. The fee and tax schedules for each sampled product are updated, where necessary, each month and a total annual amount payable calculated for each sampled account each month. The movements in these amounts are used to calculate an average movement in fees and taxes for each sampled product.

Some products, mainly loan products, incur an establishment fee. These are not accounted for by the sample of accounts and therefore require a separate estimation procedure. The price measure for establishment fees is calculated using changes in the average establishment fee charged on new accounts each month (information provided by the sampled institutions). Changes in these average fees reflect any discounting or waiving of fees by institutions.

Having previously established a methodology for measuring the value of amounts paid as interest rate margins, it is relatively straightforward (though data intensive) to construct a measure of price change for margins. The sampled institutions provide monthly data on balances and interest flows (yields) by product and in aggregate. These data are used to calculate a current period interest rate margin for each of the sampled products. However, to minimise the effect of any short-term accounting anomalies such as posting effects and adjustments of various types, the ABS constructs three-month moving averages of the average balances and interest flows and derives the required interest rates, reference rates and margin rates from the smoothed data. Because percentages (such as margin rates) are not prices, the latest period margin rates have to be applied to some monetary amount in order to compute the current period amounts that would be paid as margins. The price index is constructed by comparing the change over time in these amounts. As margins are payable on the account balances, the procedure followed is to update the base period balances using a four-term moving average CPI (as previously described for updating transaction values) and applying the calculated percentage margin for the current month.

In practice this means that if percentage margins remain unchanged over time, margin 'prices' will move in line with the lagged four term moving average of the CPI.

A price index for each sampled product is then obtained by combining the estimated movements in margins, fees and taxes. The Appendix contains a somewhat stylised worked example of the calculation of a price index for a single deposit product.

The aggregate index for deposit and loan facilities is produced by weighting together the indexes for each of the sampled products.

CHAPTER 4 REAL ESTATE AGENCY SERVICES

REAL ESTATE AGENCY SERVICES

The index for real estate agency services is designed to cover the cost of those services acquired from real estate agents by households when selling or buying real estate, including any government charges on property transfers. The services are not restricted to those acquired in respect of properties acquired by the household sector from other sectors or to properties for owner-occupation. As such, the 'number' of such services is not the same as the 'number' of dwellings underpinning the 'house purchase' component of the CPI.

ESTIMATING BASE PERIOD EXPENDITURE

Data on income from property sales commission, residential properties from Real Estate Services Industry, Australia, 1998–99 (cat. no. 8663.0) was used to derive expenditure estimates for each capital city by imputing from State/Territory level using aggregate expenditure data from the Household Expenditure Survey.

MEASURING PRICE CHANGE

Real estate agents typically quote their fees as some percentage of the price received for the property. In common with other items where charges are determined as a 'margin', this needs to be converted to a 'dollar' price. If the percentage margin is known, the agents' price for any given transaction can be computed by multiplying the sale price of the property by the percentage margin. The index number problem then decomposes into two parts — estimation of the percentage margin, and estimation of the value of the transaction the margin is to be applied to. The calculation of any government charges (stamp duty) on property transfers is identical in concept.

Historically, real estate agents tended to charge commissions in accordance with rate schedules published by the respective state and territory Real Estate Institutes. The schedules were such that the average rates of commission tended to decline with increases in property values. For example, in September 1997, the recommended schedule for NSW was for a commission of 3.1% on amounts up to $100,000 and 2.0% on each dollar thereafter. Following industry deregulation these fee schedules are no longer published and rates are open to negotiation between real estate agents and vendors. The State and Territory governments publish schedules of stamp duty.

A method for estimating the fee payable for any given property transaction is required because the percentage margin charged by individual agents is known to vary depending on the value of the underlying transaction. The ABS does this by first of all conducting a quarterly survey of real estate agents in each capital city. The respondents are asked to provide information in respect of a maximum of 6 settled residential property sales (representative of sale prices in the agents' area) for each of the three months in the relevant calendar quarter. For each transaction, the agent reports the sale price of the property and the total dollar amount of commission charged by the agent. The ABS uses ordinary least squares (OLS) regression techniques to estimate a relationship between property values and commission rates.

MEASURING PRICE CHANGE *continued*

Although there are potentially many functional forms that could fit the data, empirical analysis has shown that the following functional form is adequate:

$R = a + b_1(1/p) + b_2(1/p)^2$ where:

R = the commission rate;

p = the house price;

a = a constant; and

b_1 and b_2 are the parameters to be estimated.

Due to data volatility, the regression is run on data pooled from three quarters.

As agents' fees and rates of stamp duty depend on the value of the property being sold/purchased, it is not sufficient to simply calculate these fees and charges by reference to some average transaction value. What is required is a representative sample of transactions. A base period sample of transactions can be drawn from the population of house sales in the base period and the amounts payable as agents' commissions and stamp duty calculated from the respective regression functions and tax schedules applicable in the base period.

In subsequent quarters the base period sample of transactions is revalued to comparison period prices and the amounts that would be payable as fees and stamp duty calculated by reference to the comparison period regression function and tax schedule. The most contentious issue in this process is the method used to revalue the sample of base period transactions. The ABS is of the view that the purchase of property is best regarded as forgone consumption and therefore the transactions should be revalued in such a way as to preserve the base period command over consumer goods and services. Taking this view, the values of the sample transactions are updated using a four-quarter moving average of the CPI (lagged one quarter) as is done for transaction amounts in the deposit and loan facilities index.

The price index for real estate agency services is calculated by comparing the changes over time in the aggregate amounts payable as agents' fees and stamp duty.

CHAPTER 5 FUTURE DIRECTIONS

FUTURE DIRECTIONS

The ABS believes that the experimental indexes presented in this paper are robust and fit for purpose. Extending the coverage of the CPI to include financial services would serve to make the CPI a more comprehensive measure of price inflation for the household sector as a whole. The ABS plans to include financial services in the CPI from the introduction of the 15th series CPI in the September quarter 2005.

However, because it is important that any decision to substantially alter the composition of the CPI is well understood and supported by the majority of users, the ABS will conduct seminars in all capital cities to provide opportunities for all interested parties to learn more about the issues involved in constructing these measures. Details are contained in the enclosed flyer. Queries or comments can also be addressed to:

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The ABS then intends to update these indexes quarterly and to publish them as an experimental series (in cat. no. 6413.0.55.001) prior to including them in the CPI in September quarter 2005. The 15th series CPI will also incorporate revised weights based on the results of the Household Expenditure Survey conducted in respect of 2003–04.

APPENDIX

EXAMPLE CALCULATION OF A PRICE INDEX FOR A DEPOSIT PRODUCT

A1.1 BASE PERIOD SAMPLE ACCOUNT(a)

Date	Dr/Cr	Transaction	Transaction value	Tax	Balance
				$	
					456.23
2-Jan	Dr	Over the counter withdrawal	107.05	0.70	348.48
12-Jan	Cr	Deposit	4000.00	2.40	4346.08
13-Jan	Dr	EFTPOS transaction	50.62	0.30	4295.16
13-Jan	Dr	Over the counter withdrawal	371.00	0.70	3923.46
14-Jan	Dr	Own ATM cash	300.00	0.70	3622.76
14-Jan	Dr	Own ATM cash	100.00	0.70	3522.06
16-Jan	Dr	Own ATM cash	100.00	0.70	3421.36
16-Jan	Dr	Over the counter withdrawal	371.00	0.70	3049.66
16-Jan	Dr	Cheque	90.00	0.30	2959.36
19-Jan	Dr	Own ATM cash	100.00	0.70	2858.66
19-Jan	Dr	Own ATM cash	100.00	0.70	2757.96
19-Jan	Cr	Deposit	4000.00	2.40	6755.56
19-Jan	Dr	Cheque	740.00	1.50	6014.06
20-Jan	Dr	EFTPOS transaction	76.42	0.30	5937.34
21-Jan	Dr	Other ATM cash	20.00	0.30	5917.04
21-Jan	Dr	Cheque	100.00	0.70	5816.34
22-Jan	Dr	Cheque	43.40	0.30	5772.64
22-Jan	Dr	Cheque	302.00	0.70	5469.94
22-Jan	Dr	Cheque	37.00	0.30	5432.64
23-Jan	Dr	Over the counter withdrawal	371.00	0.70	5060.94
23-Jan	Dr	Cheque	72.00	0.30	4988.64
27-Jan	Dr	Own ATM cash	150.00	0.70	4837.94
27-Jan	Dr	Cheque	73.50	0.30	4764.14
27-Jan	Dr	Cheque	260.00	0.70	4503.44
27-Jan	Dr	EFTPOS transaction	51.45	0.30	4451.69
28-Jan	Dr	Over the counter withdrawal	19.95	0.30	4431.44
28-Jan	Dr	Cheque	150.00	0.70	4280.74
29-Jan	Dr	Cheque	140.00	0.70	4140.04
30-Jan	Dr	Over the counter withdrawal	371.00	0.70	3768.34
30-Jan	Dr	Cheque	8.00	0.30	3760.04
30-Jan	Dr	Cheque	60.00	0.30	3699.74
Total Taxes:				21.10	

Fees				
	Activity	Total number	Number charged	Amount ($)
	Over the counter withdrawal	6	2	6.00
	EFTPOS transaction	3	0	0.00
	Own ATM cash	6	0	0.00
	Other ATM cash	1	1	1.20
	Cheque	13	3	3.00
	Deposit	2	2	0.00
Total Fees:				10.20

(a) Only a single month's data is used in this example. In practice, many accounts would be sampled with each account containing data for a full year.

Taxes and fees are calculated using data in tables A1.2 and A1.3 respectively

A1.2 FEE SCHEDULE(a)

	BASE PERIOD		CURRENT PERIOD	
	Free	*Charge*	*Free*	*Charge*
Description	no.	$	no.	$
Over the counter withdrawal	4	3.00	4	3.00
EFTPOS transaction	10	0.50	9	0.50
Own ATM cash	10	0.50	9	0.50
Other ATM cash	0	1.20	0	1.20
Cheque	10	1.00	9	1.00
Deposit	0	0	0	0

(a) Summary of the information typically available from financial institutions. For each period, the table includes the number of free transactions and the per transaction charge for additional transactions. A zero number free indicates no transactions are free and a zero charge indicates all transactions are free.

A1.3 TAX SCHEDULE(a)

TRANSACTION VALUE		TAX	
Min	*Max*	*Base*	*Current*
$	$	$	$
BANK ACCOUNTS DEBIT TAX (BAD)			
0	1.00	0	0
1.00	100.00	0.30	0.30
100.00	500.00	0.70	0.70
500.00	5 000.00	1.50	1.50
5 000.00	10 000.00	3.00	3.00
10 000.00+		4.00	4.00
FINANCIAL INSTITUTIONS DUTY (FID) %			
FID		0.06	0.06

(a) Table of tax rates of the type that used to be employed in Australia. The debits tax (BAD) is levied on all debit transactions to eligible accounts, with the amount charged being set for ranges of transaction values (i.e. using a step function). Financial institutions duty (FID) was levied on all deposits until 1 July 2001. The amount of tax was determined as a percentage of the value of the deposit.

A1.4 INTEREST DATA(a)

	BASE PERIOD				CURRENT PERIOD			
	Balance	*Interest*	*Interest rate*	*Margin*	*Balance*	*Interest*	*Interest rate*	*Margin*
	$m	$m	%	%	$m	$m	%	%
Deposit products								
Personal	22 000	740	3.3636	2.4937	23 600	775	3.2839	2.3971
Current accounts	6 000	68	1.1333	4.7241	6 600	75	1.1364	4.5446
Other accounts	16 000	672	4.2000	1.6574	17 000	700	4.1176	1.5634
Business accounts	25 000	920	3.6800	2.1774	28 000	1 000	3.5714	2.1096
Total deposit accounts	47 000	1 660	3.5319	2.3255	51 600	1 775	3.4399	2.2411
Loan products								
Personal	42 000	3 188	7.5905	1.7331	46 000	3 400	7.3913	1.7103
Business	28 000	2 540	9.0714	3.2140	31 000	2 700	8.7097	3.0287
Total loan accounts	70 000	5 728	8.1829	2.3255	77 000	6 100	7.9221	2.2411
Reference rate			**5.8574**				**5.6810**	

(a) Table presents, in very summary form, balances and annualised interest flows derived by taking moving averages of data reported by financial institutions. Interest rates and margins are calculated from the balances and flows.

A1.5 CPI DATA(a)

	All groups	*4-term moving average*	*Indexation factor (movement)*
t-5	117.5		
t-4	121.2		
t-3	123.4		
t-2	127.6	122.4	
t-1	129.1	125.3	1.0237

(a) Data required to derive the indexation factor.

A1.6 PROJECTED CURRENT PERIOD SAMPLE ACCOUNT(a)

Date	Dr/Cr	Transaction	Transaction value	Tax	Balance
				$	
					467.04
2-Jan	Dr	Over the counter withdrawal	109.59	0.70	356.75
12-Jan	Cr	Deposit	4094.75	2.46	4449.05
13-Jan	Dr	EFTPOS transaction	51.82	0.30	4396.93
13-Jan	Dr	Over the counter withdrawal	379.79	0.70	4016.44
14-Jan	Dr	Own ATM cash	307.11	0.70	3708.63
14-Jan	Dr	Own ATM cash	102.37	0.70	3605.56
16-Jan	Dr	Own ATM cash	102.37	0.70	3502.50
16-Jan	Dr	Over the counter withdrawal	379.79	0.70	3122.01
16-Jan	Dr	Cheque	92.13	0.30	3029.57
19-Jan	Dr	Own ATM cash	102.37	0.70	2926.51
19-Jan	Dr	Own ATM cash	102.37	0.70	2823.44
19-Jan	Cr	Deposit	4094.75	2.46	6915.73
19-Jan	Dr	Cheque	757.53	1.50	6156.70
20-Jan	Dr	EFTPOS transaction	78.23	0.30	6078.17
21-Jan	Dr	Other ATM cash	20.47	0.30	6057.40
21-Jan	Dr	Cheque	102.37	0.70	5954.33
22-Jan	Dr	Cheque	44.43	0.30	5909.60
22-Jan	Dr	Cheque	309.15	0.70	5599.75
22-Jan	Dr	Cheque	37.88	0.30	5561.57
23-Jan	Dr	Over the counter withdrawal	379.79	0.70	5181.08
23-Jan	Dr	Cheque	73.71	0.30	5107.08
27-Jan	Dr	Own ATM cash	153.55	0.70	4952.83
27-Jan	Dr	Cheque	75.24	0.30	4877.28
27-Jan	Dr	Cheque	266.16	0.70	4610.43
27-Jan	Dr	EFTPOS transaction	52.67	0.30	4557.46
28-Jan	Dr	Over the counter withdrawal	20.42	0.30	4536.73
28-Jan	Dr	Cheque	153.55	0.70	4382.48
29-Jan	Dr	Cheque	143.32	0.70	4238.46
30-Jan	Dr	Over the counter withdrawal	379.79	0.70	3857.98
30-Jan	Dr	Cheque	8.19	0.30	3849.49
30-Jan	Dr	Cheque	61.42	0.30	3787.77
Total taxes:				21.21	

Fees

Activity	Total number	Number charged	Amount
			$
Over the counter withdrawal	6	2	6.00
EFTPOS transaction	3	0	0.00
Own ATM cash	6	0	0.00
Other ATM cash	1	1	1.20
Cheque	13	4	4.00
Deposit	2	2	0.00
Total Fees:			11.20

(a) The opening balance and transaction values are derived by applying the indexation factor to the base period amounts. The tax payable is determined by reference to the data in table A1.3. Fees payable are determined by reference to data in table A1.2.

A1.7 INDEXES FOR CURRENT ACCOUNTS(a)

	BASE PERIOD		CURRENT PERIOD	
Component	*Value aggregate*	*Index*	*Value aggregate*	*Index*
Margins	28 344.0	100.0	27 913.0	98.5
Fees	11 904.0	100.0	13 071.0	109.8
Taxes	14 739.0	100.0	14 818.0	100.5
Total	**54 987.0**	**100.0**	**55 803.0**	**101.5**

(a) This table brings it all together. The current period value aggregates are derived as follows: For margins — the base period aggregate is multiplied by the product of the indexation factor (table A1.5) and the ratio of the current and base period margins for current accounts (table A1.4). For fees — the base period aggregate is multiplied by the ratio of total fees payable on the sample account in the current period (table A1.6) and the base period (table A1.1). For taxes — the same procedure is followed as for fees.

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