2002 Voorburg Group Conference Paper

Australian Bureau of Statistics
Development of a Producer Price Index for Other Financiers

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1 INTRODUCTION

The ABS Prices Development section has established a long term project to construct consumer price indexes for deposit and loan facilities. Initially, the focus of their work is on banks and will extend to credit unions, building societies and, potentially, non-deposit taking institutions.

Concurrent research is also taking place in developing a producer price index for non-deposit taking institutions that provide finance leasing, personal and commercial fixed lending services. This paper provides a status report to the Voorburg Group on the development of the *ABS Producer Price Index for Other Financiers*.

The issues associated with effectively pricing the output of financial services are complex. The following paper presents a framework for achieving this using a model specification pricing approach. Several challenging conceptual and pricing issues associated with pricing the output of this industry are yet to be resolved, however, and this paper aims to stimulate international discussion on these issues.

2 SCOPE

2.1 ANZSIC 7330: *Other Financiers*

The service industries price index development work is taking place within the classification framework provided by the Australian and New Zealand Standard Industry Classification (ANZSIC). The purpose of this index is to measure changes in prices of services provided by establishments classified to ANZSIC class 7330: *Other Financiers.* According to ANZSIC, this industry class includes units mainly engaged in providing credit, or lending money, or in leasing machinery, plant or equipment purely on a financial service basis (that is, without physically handling the goods) not elsewhere classified. Units whose main sources of funds are deposits are excluded from this ANZSIC class, as are units mainly engaged in finance broking or in arranging finance for others.

2.2 Relationship to ISIC and CPC

Non-deposit taking institutions, for example, finance companies and general financiers are in scope of this index. Authorised deposit taking institutions such as banks, credit unions, building societies and money market corporations are excluded. ANZSIC class 7330 concords with ISIC classes 6591: *Financial Leasing* and 6592: *Other Credit Granting*. In relation to the International Standard Industrial Classification (ISIC) the activity of financial leasing is classified to only one class irrespective of the type of unit providing the financial leasing service. However, in ANZSIC, the type of unit providing the financial leasing service is the crucial factor in determining which class to place the activity of 'financial leasing'. The corresponding Central Product Classification (CPC) is 71100: *Financial intermediation services, except investment banking, insurance services and pension services*. Like ISIC, the type of financial intermediary is not relevant to the CPC.

3 INDUSTRY OVERVIEW

3.1 Size and Type of Production

3.1.1 Output of Financial Intermediaries

Para 6.127 of *System of National Accounts 1993* (SNA93) refers to non-deposit taking financial intermediaries:

> …They lend funds by making loans or advances, or by puchasing bills, bonds or other securities. The pattern of their financial assets is different from that of their liabilities and in this way they transform the funds they receive in ways more suited to the requirements of the borrowers…

As a rule, benchmark rates (cost of funds measure) are matched to the maturity structure of the various lending portfolios. For example three-year new motor lease/loan portfolios might be typically linked to three-year bank interest rate swaps.

3.1.2 Australian National Accounts: Input-Output Tables, Product Details *(ABS: 5215.0)*

Current estimates for the *Other Financiers* ANZSIC class (7330) are difficult to obtain. The most recently released National Accounts Input-Output (IO) Tables (1996/97) value Australian production of the commodity 73300020 Financial Services - financial intermediation services indirectly measured (FISIM), at $1.857 billion. 73300030 Financial services n.e.c. is valued at $1.038 billion. Therefore, the total value of production for the 7330 IO product group is approximately $2.9billion. This implies that FISIM is about 64% of total output for the Other Financiers industry. The value of services to both the business and household sectors is represented in the total, and represents approximately 50% of the production derived from the entire non-bank finance sector. In comparison, Australian Bank services were valued at $17.9 billion.

3.1.3 Finance Leasing, Commercial and Personal Lending

The key activities of the Other Financiers industry are the provision of finance leases, commercial, and personal finance services. These three broad categories of financial service can be sub-divided by the types of assets financed. According to the ABS' classification of lending finance commitments by type of lender and purpose, the two major categories for the *Other Financiers* industry, by purpose, are motor vehicle and general equipment financing. The following table provides a breakdown of all major items financed within the three major categories of financial service from the *Other Financiers* industry.

Commitments for types of items financed by broad financing category based on ABS lending commitments data

Finance Lease Activity (by purpose)	Commitments	%
	$'000	
Finance Leasing	**3,150,423**	**100**
Cars - New	930,037	29.52
Electronic Data Processing Equipment	592,791	18.82
Cars - Used	286,708	9.10
Office Machines	272,934	8.66
Shop & Office furniture, fittings & equipment	170,324	5.41
Construction and earthmoving equipment	141,854	4.50
Manufacturing equipment	134,326	4.26
Agricultural machinery and equipment	102,806	3.26
Heavy Trucks - New	102,127	3.24
Light Trucks - New	81,471	2.59
Heavy Trucks - Used	37,737	1.20
Light Trucks - Used	19,385	0.62

Commercial Fixed Loans (by purpose)	Commitments	%
	$'000	
Commercial Loans	4,642,062	**100**
Motor Vehicles	1,781,104	38.37
Factoring - Commitments for finance secured by trade debts	1,251,550	26.96
Other Plant & Equipment (excluding transport equipment)	1,002,791	21.6

Personal Fixed Loans (by purpose)	Commitments	%
	$'000	
Personal Loans	4,642,062	**100**
Cars & Station Wagons - New	1,807,379	30.39
Cars & Station Wagons - Used	1,988,830	33.44
Other Motor Vehicles	263,477	4.43

4 PRODUCT INFORMATION

4.1 Major Service Lines

4.1.1 Financial intermediation services indirectly measured (FISIM)

FISIM is defined as the value of financial intermediation services that are not charged for explicitly. That is, the revenue earned by financial intermediaries through the act of paying lower rates of interest to those who lend them money and charging higher rates of interest to those who borrow from them.

According to SNA93, the output of the financial service is the FISIM and fees. For finance leasing, the actual item being leased is regarded as a capital purchase by the lessee. As such the output associated with the item is recorded under the industry that sold it. This explains why the price for the financial lease service must only include the FISIM and no principal. Any price movements that we measure should exclude the repayment of principal and the interest cost that a financial institution must pay for the use of money.

Calculating the value of FISIM for index components and elementary aggregates to derive weights of a proposed price index is very difficult in the absence of detailed data. Consequently, in developing an index structure and weighting pattern for the Other Financiers price index, ABS lending commitments data presented in section 3.1.3 was used as a proxy measure.

4.1.2 Price Determining Characteristics

The major price determining factors for this industry are:

- Customer risk - assessed against predetermined criteria; Moody's, Standard & Poors ratings;
- Purpose of loan - e.g. new motor vehicle, used truck, computers etc.
- Length of contract
- Cost of funds/source of finance e.g. bank bills, debentures, bonds, interest rate swaps, etc.

The types of assets financed within the broad financial service categories presented in section 3.1.3 provide reasonably homogeneous groupings in terms of the above price determining characteristics, and are therefore appropriate to use as the basis for the structure of a price index for Other Financiers.

4.1.3 Cost of Funds Benchmark

Financiers raise funds via money markets through a variety of financial instruments including swaps, bonds, debentures and treasury notes. The cost of funds is the interest cost that a financial institution must pay for the use of money. All sources of debt with terms to maturity greater than 1 year are considered to be long term by the industry. "Shorter currency" long term debt has a 1 to 5 year term to maturity. Few finance companies are prepared to lend on fixed rates for periods much longer than five years due to uncertainty about future interest rates.

Most money and bond market rates are released by the Reserve Bank of Australia or the Australian Financial Review website. Bank interest swap rates are available from the major banks such as the Commonwealth and ANZ Banks. The proposed price index will be compiled on a quarterly basis. A time series of quarterly-averaged swap rates (swap rates fluctuate on a daily basis) can be quite easily obtained from the major banks. At this stage, the proposed strategy is to question each company about the source of finance for each loan/lease portfolios. For example, motor vehicle lease finance contracts might be benchmarked on three-year company debentures or bank bill swaps or interest rate swaps. Heavy machinery finance might be sourced from five-year bond yields. Any potential volatility of this measure will be smoothed by obtaining a quarterly average.

4.2 Service Delivery Process

4.2.1 Finance Leasing

With respect to finance leases, the financier (or lessor) ostensibly purchases the equipment or vehicle for the customer (the lessee) and is therefore, the owner of the good(s). The goods are then leased to the customer, under a lease agreement, which sets out the residual value of the goods, the term of the lease in months, the lease payments, which are fixed throughout the term of the loan, and the depreciation rate. The terms of the lease are flexible, subject to Australian Tax Office guidelines (maximum term 60 months). The asset's residual value (that is, its fair market value at the end of the lease term) is usually established in accordance with a schedule issued by the Commissioner of Taxation. If the asset is returned to the lessor at the end of the lease, the lessee can be liable for the difference between the asset's residual value and the amount for which it is sold.

Lease finance charges include establishment and pre-determination fees. Ongoing fees are not common but will probably become increasingly so in future years. Fees are usually not financed. Payments can be made on a monthly, quarterly, half yearly or irregular basis.

Australian finance companies are arguably the most active financial institutions in regard to this type of lending. In the case of motor vehicle finance leasing, a significant proportion of their finance is sold through car dealers and brokers. Usually, the agents administer the contracts but seek clearance through the financier which provides an approved interest rate. Both fleets and single motor vehicles can be finance leased in this way. Novated leasing, as a salary packaging option, is a relatively new development and a few years away from impacting the market significantly. General equipment finance leases are also sold through dealerships but more commonly from the financier direct.

4.2.2 Personal fixed lending

Personal contract finance applied to new and used cars, normally operates for three to five years. At the beginning of the period the customer pays up front charges and has set periodic repayments. In Australia, hire purchase is probably the most common form of car finance and means that the vehicle is sold to the customer subject to certain conditions, which are typically: that all the payments are made, and made on time; the vehicle is comprehensively insured at all times; and the vehicle is kept in good condition. The customer starts by paying a deposit, with the balance plus interest being paid in fixed installments over a pre-determined contract period, typically 36 months. If all the conditions are satisfied, full

ownership passes to the customer when the final installment is paid. Higher interest rates generally apply to unsecured loans.

4.2.3 Commercial fixed lending

Commercial borrowers take out fixed loans for many reasons. Approximately 27% of commercial fixed lending commitments by finance companies in 2000/2001 were for the purpose of debt factoring, that is, accounts receivable financing. Motor vehicle finance accounted for more than 38%, while other plant and equipment accounted for nearly 26% of such commitments.

Floor plan (or wholesale finance) represents a significant proportion of commercial motor vehicle finance. Motor vehicle retailers frequently finance their entire inventory. Dealers that have larger loans approved tend to attract more competitive interest rates.

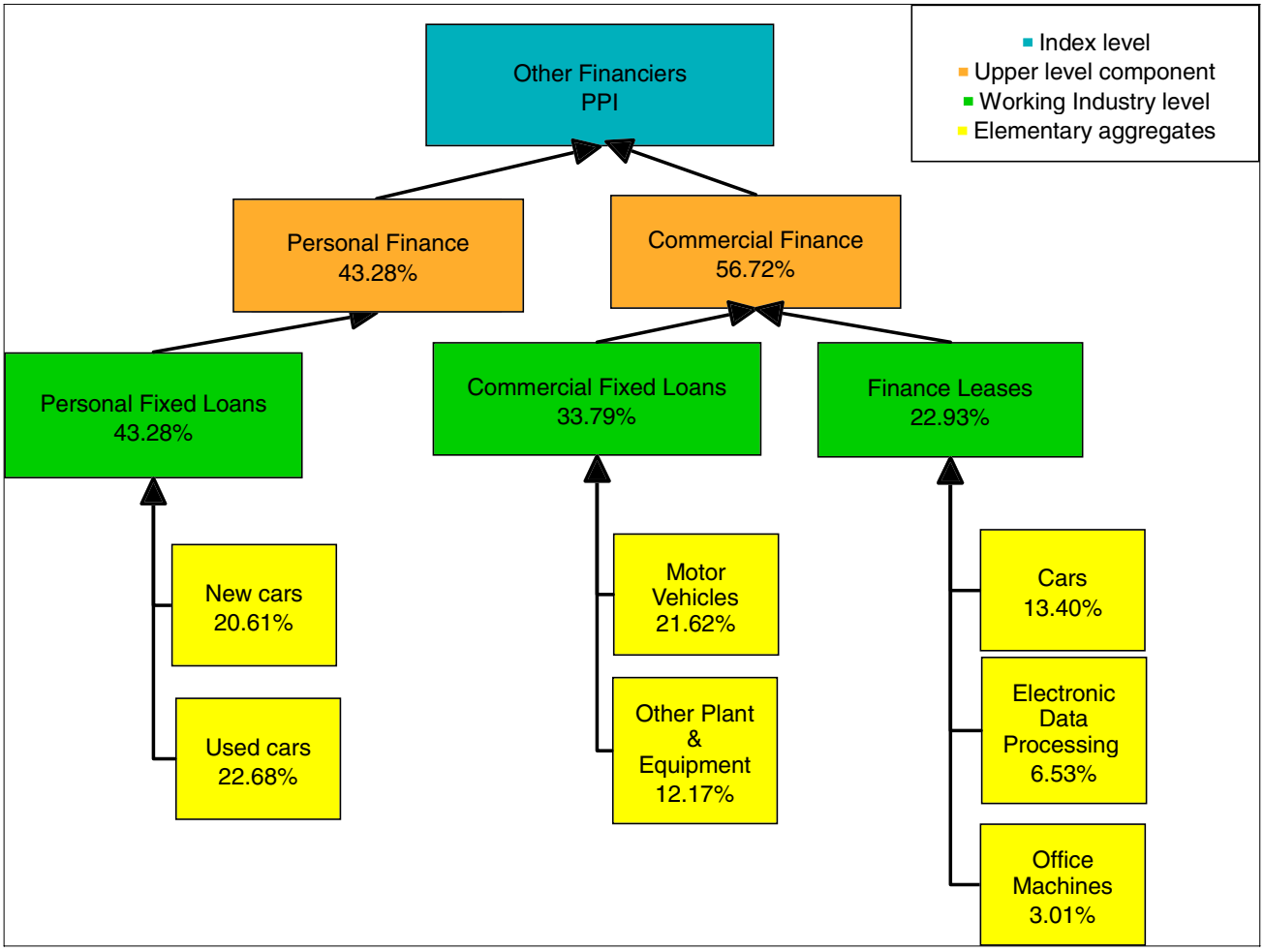
5 INDEX STRUCTURE

5.1 Index Weights

The proposed index structure, including the top level components and the EAs, takes into account the most significant items and relative values from the lending commitments data. Consumer and commercial finance form two upper level components. Lease finance is predominantly a business activity and will feed directly into the aggregate commercial finance component.

As more information about the main sources of finance unfolds, it may be possible to derive an average weighted margin (i.e. average interest rate charged to customers less average cost of funds) for specific financing activities. This could possibly be applied to the lending commitments data to estimate the FISIM (and fees) for each EA, that is, the true measure of output and ideal weight for the EA within the price index structure for the industry. An alternative (and costly) method for assigning index weights might be to select a larger stratified sample of financiers and survey them about their margins.

5.2 Other Financiers Producer Price Index Structure



6 MARKET AND TRANSACTIONAL INFORMATION

6.1 Item Domain

Finance companies and general financiers offer a broad range of financial products and services in scope of ANZSIC 7330; some examples being finance leasing; debt factoring; fixed commecial and personal lending; housing finance; revolving commercial and personal financing, including credit and debit card financing. Such services are further characterised by the purpose or destination of the finance; borrower credit ratings; assets secured against the loan; etc.

To develop a single index that covers the entire range of services offered by *Other Financiers* is resource intensive and risky. The experimental nature of this index prompted a decision to focus on a reduced range of significant financial services (i.e. financial lease, commercial finance and personal finance). Consequently, home mortgage lending and revolving credit services are not being considered at this stage. It is acknowledged that financiers in this class are emerging as important competitors in the home lending and credit card financing markets and industry trends will be monitored over time to determine structural and weighting changes. In relation to the input-output data, at least 2/3 of the output is probably covered with the approach proposed in this paper.

6.2 Types of Prices

From considering the SNA93 material, it is clear that we wish to price the FISIM and fees associated with a financial lease, commercial and personal fixed loan as the price of the lease or loan service.

The main source of revenue is derived from the interest received from lease and loan contracts. Fees and charges for most finance companies currently represent an insignificant proportion of their overall revenue. Anecdotal information suggests that ongoing fees and charges are quite rare but are likely to become increasingly common in the future in line with international trends. Nevertheless, the inclusion of fees and charges in model contracts is essential for capturing the total price received by the financier. The basic price is therefore the sum of the interest and fee payments minus the cost of the finance over the life of the contract.

7 PRICING METHODOLOGY

The preferred approach being explored by the PPI area, is to price some model based specifications which adequately represent the operations of the non-deposit taking institutional lending and leasing industries.

7.1 Sampling method

Purposive sampling is used. The ABS Financial Surveys Section provided unit record files and a list of respondents to the Housing finance, Commercial Finance and Lease Finance collections. The Australian Prudential Regulation Authority (APRA) maintains a list of all registered finance corporations, categorised according to the financial institution classifications specified under the Financial Sector (Collection of Data) Act 2001. This list of institutions can be accessed from the APRA website and includes a complete list of finance companies and general financiers.

7.2 Data collection

7.2.1 Stage 1 - Determination of major activities

In an attempt to gather market intelligence and determine the most significant activities undertaken by each financier, a sample of major non-deposit taking financiers were surveyed.

A three-part questionnaire based around the proposed index structure was designed - each part related to one of the industry level components. Approximately 20 of the largest financial institutions were surveyed about the earned income, or margins, received for each elementary aggregate category. The 2000/2001 Australian financial year was the survey reference period. Income from all contracts that were active during the reference period was reported. Definitions of the in-scope activities of interest to the ABS were provided to ensure consistency. The form also instructed the respondents to exclude operating lease revenue.

The respondent was asked to provide earned income for a number of financing activities - these activities related to each proposed EA. A brief explanatory note accompanied each question. For example, commercial finance of motor vehicles should include revenue from financing of cars, station wagons, trucks and passenger vehicles such as buses but exclude income from motor cycles, trailers, caravans and trains financing. In addition, the revenue from finance leasing, commercial fixed lending and personal fixed lending was mutually exclusive.

The questionnaire represents the first phase of enlisting the financial institution in the quarterly price collection. Compliance and the quality of data received was very good with all targetted businesses responding accurately. Post-enumeration checks were carried out to determine whether questions were interpreted correctly.

7.2.2 Stage 2 - Constructing pricing specifications

Having established weighting data for each financier, the second phase involved interviewing a marketing expert or accountant to discuss representative pricing models. The weighting data is used to target significant activities of each financier for pricing. Some key contract variables have been identified based on respondent feedback. It is important to capture these constants in the model contract:

- the loan amount to a major customer;
- trade channel;
- customer credit rating;
- settlement date;
- payment dates;
- number of payments;
- term of the contract;
- life of the contract (taking into account early termination);
- residual values (if applicable);
- application, exit &/or other fees

If any of these characteristics change for an item being priced, then this may affect the price calculation and would need to be taken into consideration when determining final price as described below.

A spreadsheet, containing a description of each of the pricing variables, was sent to each respondent prior to the interview to illustrate the type of information needed to construct representative model contracts. In addition, the cost of funds rate and the appropriate competitive customer interest rate was requested. Where appropriate, assurance was sought that the interest margins for specific customer types would move similarly and therefore be indicative of all loan margins in that portfolio. More than one model specification per EA was requested when it was deemed that one model was not representative of the company's loans volume.

Availability of historical data was dependent on the level of sophistication of the financing entity's reporting systems.

7.3 Price calculation

7.3.1 Pricing options

A number of pricing options have been considered to address various conceptual issues. These options are not necessarily mutually exclusive.

Option 1

The final price is represented by the sum of the total FISIM received, that is, interest from item financed minus interest from cost of funds, over the life of the loan/lease plus fees or charges. Feedback from respondents on this approach has been positive, suggesting that this is an accurate way of capturing the margins for representative loan or lease contracts. By entering the interest rate, present value (principal), future value (cash balance after the last payment is made) and number of payments, etc., an annuity function will calculate the

payment for a lease or loan based on constant payments and a constant interest rate. The amortisation method has the benefit of showing the reduction in principal, the distribution of interest and the cost of funds amount over the life and term of the contract. Most electronic spreadsheet software have an inbuilt amortisation function, so this is a fairly simple task.

A limitation of this method is that the price relates to the entire contract term, that is and future FISIM (and fee) amounts is tracked each quarter for the model specification. From a price and volumes perspective relating to a particular period (e.g. month or quarter), we may prefer to only record the amount of FISIM received by the finance company in that particular period.

Therefore, in the case of option 1, the final price is the expected nett income (i.e. FISIM plus fees) derived from a new contract written in the current quarter. Price change is calculated by constructing price relatives: current quarter margin/base period margin *100. A raw index will be created from a weighted average of the price relatives for each EA.

Option 1 example

A motor vehicle personal finance contract is selected to represent a specific customer profile, for example, a home owner. The institution specifies that the average life of such a contract is 28 months, however the original contract term is 48 months. Penalty payments apply in the case of early contract termination. The loan is amortised over 48 months but only the payments relating to the first 28 months are used to calculate the margin. The sum of the interest earned over 28 months, the application fees and exit fees less taxes represent income to the financier. Subtract from this the total interest expense (cost of funds) to the financier to determine the margin.

A	B	C	D	E
Loan Amount	$15,000.00		**Payments**	17859.34
Average Quarterly Customer Interest Rate	10.45%			
No. of payments	48			
Actual no. of payments	28		**Application Fee**	120
Monthly Payment	383.69		**Exit Fee**	105.16
Total Interest Repaid	$3,414.64		**Interest Earned**	2754.18
Total Repaid	$18,417.05		**Revenue**	2979.34
Settlement Date	1/1/2002		**Interest Expense**	1531.27
Cost of funding (quarterly average)	5.81%		**Margin**	**1448.07**

Option 1 example (continued)

A	B	C	D	E	F	G	H	I
Payment	Date	Balance	Interest	Principle	Payment	Closing	Daily Interest	Cost of funds
Payment	Date	Balance	Interest	Principle	Payment	Closing	Daily Interest	Cost of funds
		$	$	$	$	$	Rate	
1	1/2/2002	15000	133.13	250.56	383.69	14749.44	4.295	74.02
2	1/3/2002	14749.44	118.24	265.45	383.69	14483.99	4.223	65.74
3	1/4/2002	14483.99	128.55	255.14	383.69	14228.85	4.147	71.47
4	1/5/2002	14228.85	122.21	261.48	383.69	13967.38	4.074	67.95
5	1/6/2002	13967.38	123.97	259.72	383.69	13707.65	3.999	68.92
6	1/7/2002	13707.65	117.74	265.95	383.69	13441.7	3.925	65.46
7	1/8/2002	13441.7	119.3	264.39	383.69	13177.31	3.848	66.33
8	1/9/2002	13177.31	116.95	266.74	383.69	12910.58	3.773	65.02
9	1/10/2002	12910.58	110.89	272.8	383.69	12637.78	3.696	61.65
10	1/11/2002	12637.78	112.16	271.52	383.69	12366.25	3.618	62.36
11	1/12/2002	12366.25	106.21	277.47	383.69	12088.78	3.54	59.05
12	1/1/2003	12088.78	107.29	276.4	383.69	11812.38	3.461	59.65
13	1/2/2003	11812.38	104.84	278.85	383.69	11533.53	3.382	58.29
14	1/3/2003	11533.53	92.46	291.23	383.69	11242.3	3.302	51.4
15	1/4/2003	11242.3	99.78	283.91	383.69	10958.39	3.219	55.48
16	1/5/2003	10958.39	94.12	289.57	383.69	10668.83	3.137	52.33
17	1/6/2003	10668.83	94.69	289	383.69	10379.83	3.054	52.65
18	1/7/2003	10379.83	89.15	294.54	383.69	10085.29	2.972	49.57
19	1/8/2003	10085.29	89.51	294.18	383.69	9791.11	2.887	49.77
20	1/9/2003	9791.11	86.9	296.79	383.69	9494.32	2.803	48.31
21	1/10/2003	9494.32	81.55	302.14	383.69	9192.18	2.718	45.34
22	1/11/2003	9192.18	81.58	302.1	383.69	8890.08	2.632	45.36
23	1/12/2003	8890.08	76.36	307.33	383.69	8582.75	2.545	42.45
24	1/1/2004	8582.75	76.17	307.51	383.69	8275.23	2.457	42.35
25	1/2/2004	8275.23	73.45	310.24	383.69	7964.99	2.369	40.83
26	1/3/2004	7964.99	66.13	317.56	383.69	7647.43	2.28	36.77
27	1/4/2004	7647.43	67.87	315.82	383.69	7331.62	2.189	37.74
28	1/5/2004	7331.62	62.97	320.72	383.69	7010.9	2.099	35.01
29	1/6/2004	7010.9	62.22	321.46	383.69	6689.43	2.007	34.6
30	1/7/2004	6689.43	57.46	326.23	383.69	6363.2	1.915	31.94
31	1/8/2004	6363.2	56.48	327.21	383.69	6035.99	1.822	31.4
32	1/9/2004	6035.99	53.57	330.12	383.69	5705.87	1.728	29.78
33	1/10/2004	5705.87	49.01	334.68	383.69	5371.19	1.634	27.25
34	1/11/2004	5371.19	47.67	336.02	383.69	5035.17	1.538	26.5
35	1/12/2004	5035.17	43.25	340.44	383.69	4694.73	1.442	24.04
36	1/1/2005	4694.73	41.67	342.02	383.69	4352.71	1.344	23.17
37	1/2/2005	4352.71	38.63	345.06	383.69	4007.65	1.246	21.48
38	1/3/2005	4007.65	32.13	351.56	383.69	3656.09	1.147	17.86
39	1/4/2005	3656.09	32.45	351.24	383.69	3304.85	1.047	18.04
40	1/5/2005	3304.85	28.39	355.3	383.69	2949.55	0.946	15.78
41	1/6/2005	2949.55	26.18	357.51	383.69	2592.04	0.844	14.55
42	1/7/2005	2592.04	22.26	361.43	383.69	2230.61	0.742	12.38
43	1/8/2005	2230.61	19.8	363.89	383.69	1866.72	0.639	11.01
44	1/9/2005	1866.72	16.57	367.12	383.69	1499.6	0.534	9.21
45	1/10/2005	1499.6	12.88	370.81	383.69	1128.79	0.429	7.16
46	1/11/2005	1128.79	10.02	373.67	383.69	755.12	0.323	5.57
47	1/12/2005	755.12	6.49	377.2	383.69	377.92	0.216	3.61

Option 2

Using the sum of all future FISIM plus fee amounts as a current price as proposed in option 1 is not ideal. One possibility is to apply a discount rate to the series of future FISIM plus fee receipts in order to calculate a Net Present Value (NPV). Defining an appropriate discount rate to use, for example, a projected inflation rate, and how this might change over time, are difficult issues to resolve. Such a method is also unlikely to resolve the problems associated of using a price index based on option 1 to deflate an independent quarterly current price income estimate.

Option 3

From a price and volumes perspective, we would ideally like to take account of all loans outstanding at a particular point in time (for the particular financed item being sampled), and how changes in margins (and / or fees) which have occurred over time affect all payments in the current period. Such an approach would attempt to track the amount of FISIM (plus fees) received each quarter for a volume of contracts struck at different points in time in the past, holding the type and amount of contracts constant (i.e. constant quantity). The key aims of this approach would be to appropriately separate changes in output for the industry into price and volume effects, i.e. the price index would be appropriate to deflate a current price estimate of output for the industry.

Acheiving this goal using the model pricing approach as described in this paper would be difficult. Ideally you would like to compare the FISIM flows for equivalent time period payments (e.g. all first quarter FISIM flows, all second quarter FISIM flows, ... all final quarter FISIM flows), for the model specification in sequential periods (where different interest margins and fees may have applied thus causing a price change), for all loans outstanding. The table below presents a hypothetical example for a particular model specification.

Option 3 example

Time Model contract	T1	T2	T3	T4	T5
FISIM flow from model contract in T0	70	50	37	25	14
FISIM flow from model contract in T1	100	70	50	37	25
FISIM flow form model contract in T2		103[1]	72	51	38
FISIM flow from model contract in T3			108[2]	75	54

[1] Increase in FISIM flow for first payment due to an increase in cost of assest financed (see section 7.3.2)

[2] Increase in FISIM flow for the first payment due to an increase in interest margin

In this simple hypothetic example, to calculate a price index we would want to compare the FISIM flows for equivalent time period payments, for the model specification in sequntial periods, for all loans outstanding.

For **T3** this would be a weighted average of the following relatives:

First period payments: FISIM flow from model contract in (T3 / T2) = 108/103
Second period payments: FISIM flow from model contract in (T2/T1) = 72/70
Third period payments: FISIM flow from model contract in (T1/T0) = 50/50

The weights for the relatives would equate to the average proportion of FISIM generated for a particular periods payment over total FISIM for all periods payments. (Obviously FISIM is higher in earlier payments when the amount of principle outstanding is the greatest).

Using this kind of approach within a model specification framework is clearly not practical. Large amounts of historical data would be required for each calculation, and a number of assumptions would have to be made about things remaining constant over time. However a theoretical derivation could possibly be used to estimate trend weights to apply to price relatives over time derived from option 1. This idea has not yet been explored.

Realistically, to attempt this type of pricing approach requires a sample of bills methodology to be used, rather than model specification pricing. This is the approach being pursued by the ABS for constructing a consumer price index for deposit and loan facilities. It is significantly more data intensive and costly than the model specification approach being pursued in this experimental PPI for *Other Financiers*. In addition, a sample of bills method lends itself to non fixed loan interest rates, where the model specification approach could not be applied (i.e. as interest rates can't be assumed to be fixed for the loan period).

7.3.2 Principal value

The principal amount or the cost of the asset/item being financed must be representative of actual transactions. Obviously, *Other Financiers* receive price increases (i.e. in the FISIM) when the loan/lease amount increases and vice versa. When we ask the respondent for the cost of the item being financed, we need to ensure this is representative of the applicable range of items being financed. We then need to ensure changes in the cost of the items being financed are represented in the price index. Some options for achieving this are:

(i) Allow the respondent to report increases in the cost of the representative item being financed;
(ii) Keep the cost of the item being financed constant and apply a specific ABS price index (e.g. motor vehicle price index);
(iii) Keep the cost of the item being financed constant and apply a generic ABS price index (e.g. the aggregate PPI or CPI).

Each of these options have some advantages and disadvantages, which have yet to be explored in detail in the development of the Other Financiers price index. An interesting point in the case of (ii) is whether we would want to apply a constant quality price index, or a nominal value price index. In the case of motor vehicles or equipment this may not make a lot of difference. However in the case of computers, where constant quality price indexes fall at a rate of around 30% p.a., it would clearly seem inappropriate to use a constant quality price index as this would bear little relationship to the changing value of the loan contracts.

8 LIMITATIONS/CONCERNS

Defining the quality of the financial service is difficult. Some may argue quality has increased in recent times due to the implementation of easier and more flexible payment methods, simplified administrative processes etc. However these potential major quality improvements have probably passed us now, and adjusting for them would be very difficult anyway. Therefore any changes to an existing lease finance service would be treated as a replacement service, assuming the key factors described in Section 7.2.2 are held constant.

Accurate value aggregate data is required to weight the components. The main problem relates to whether the proxy source (lending committments) is representative of FISIM which is dependent on different margins applying to different financial services. From data collected in the survey we could possibly undertake some assessment of this. Further surveying of potential respondents will also assist.

Contract pricing must be a representative industry output measure and therefore good judgement is needed in selecting types of contracts. Care must be taken to ensure that the cost of funds benchmark, or reference rate, reflects real world transactions. The FISIM and fees which define the service are potentially quite volatile due to a fluctuating cost of funds rate. Bank swap rates, for example, fluctuate greatly and vary from bank to bank so we may need to experiment with various methods of smoothing swap rates.

The finance industry is a dynamic industry and so quality adjustment of contracts is another concern - industry developments will need to be monitored closely to determine changes in customer mix, new pricing methods etc. Sample review will need to occur frequently and contracts being priced will need to be tightly specified.

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