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Older people and credit card fraud

Jeromey Temple

With the ageing of the population, and increasing demand for individuals to be financially literate and self-sufficient, older Australians may find themselves at greater risk of fraud. Although the proportion of the elderly experiencing fraud is lower than for those aged less than 65 years, this is the crime they are most likely to experience and the effects can be devastating as the elderly are often not able to recoup the losses. This paper uses a series of simulation models to estimate the relative growth in fraud victims over the next 25 years. The modelling suggests that the prevalence of fraud could increase by up to 20 percent and the rate of growth in the number of older fraud victims will be much faster. A recent paper published by the institute has found that fraud has been estimated to be the largest component of money laundering (see T&I 342). Unfortunately, administrative data on the number of victims of fraud are significantly under-reported as most people do not report being a victim to the police. Victims do report to their financial institution, but there is no requirement for the financial sector to report on the number and type of fraud incidents they deal with each year.

Toni Makkai
Director

The Australian Bureau of Statistics projects that the number of persons aged 55 and older will increase by more than 50 percent between 2005 and 2020 and by over 200 percent by 2050 (ABS 2003). In comparison, the number of persons aged 18 to 54 years is projected to grow by just over seven percent by 2050. This important demographic change, all else remaining equal, implies a greater role for the elderly in the economy and society more generally. This has important implications for individuals, firms and all levels of government.

Faced with population ageing, the Australian Government has implemented policies that place a greater onus upon older people to be financially self-sufficient during retirement, through for example, the Superannuation Guarantee Charge. Importantly, research shows that the economic role of older Australians will have important implications for the economy and for financial wellbeing in retirement (Temple 2006). In the context of these changing economic roles and expectations, an important question for ongoing research concerns the prevalence and correlates of financial abuse of older Australians. This question is particularly important as, due to a greater likelihood of adverse health conditions, and in some cases significant levels of accumulated savings, older Australians may be at risk of fraud from health care professionals, accountants, lawyers and financial advisers (Smith 2000).

This paper uses unpublished data from the 2004 International Crime Victimisation Survey (ICVS) to estimate age profiles of one form of fraud in Australia: credit and bank card fraud. It is important to note that this represents just one type of fraud that may affect older Australians.

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GPO Box 2944
Canberra ACT 2601
Australia
Tel: 02 6260 9272
Fax: 02 6260 9293

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Furthermore, this study examines the previously unexamined sociodemographic characteristics of the victims of this form of fraud. Finally, it seeks to provide indicative projections of bank and credit card fraud in the Australian economy over the period 2006–31.

Fraud and financial abuse of older people

A growing body of literature has developed on elder abuse in Australia and internationally. A substantial component of elder abuse is financial exploitation and fraud. In the Australian context, fraud can be classified as an offence involving: cheque or credit card fraud; fraudulent trade practices; misrepresentation of professional status; and non-fraudulent trade practices (Muscat, James & Graycar 2002).

In older age groups, fraud has been found to be about 2.2 times more prevalent than violent offences, such as assault (Carcach, Graycar & Muscat 2001). Within the broader population, these authors found the prevalence of fraud comparable to that of assault. Muscat's group (2002) examined the prevalence of any type of fraud, related to: construction, building or repair work; work done by a garage/repairer; vehicle purchase; shopping purchase; other purchase, financial; and investment and insurance fraud. About four percent of older Australians were estimated to be victims of fraud using this measure compared with more than nine percent of persons aged less than 65. That is, although the risk of fraud is greater for younger, rather than older Australians, in terms of the kinds of crimes experienced by older Australians alone, fraud is the most common.

Carcach, Graycar and Muscat (2001) proposed two competing hypotheses about older persons and the risk of financial vulnerability. First, due to lower incomes as a result of heavy reliance on public pensions, older persons may be more attracted to get rich schemes. The alternative hypothesis is that, as they have less money to be spent or stolen, older people would be at a lower risk of financial vulnerability. In another study, Friedman (1992) posited that confidence swindlers are often attracted to the elderly due to: their accessibility – being detached from the formal labour market, they are more likely to be found in public spaces; social isolation – due to isolation, many are eager to socialise, even with strangers; decreasing mental and physical wellbeing; and favourable financial circumstances.

Australian empirical studies have found that having been a victim of a personal crime, and having an active social life (defined as having gone out in the evening at least once per week), or being separated or divorced increased the likelihood of being a victim of fraud more generally (Carcach, Graycar & Muscat 2001). In a community sample of older persons in the Netherlands, it was found that males, those living alone, and persons with depressive symptoms were among the high risk groups of financial mistreatment (Comijs et al. 1998). Importantly, this same study found that the determinants of financial abuse of older persons differed from the factors associated with physical or psychological mistreatment. Lee and Soberon-Ferrer's study of fraud (1997) in America found that increasing age, being widowed, divorced or single and having a low level of education were associated with higher vulnerability to fraud. Interestingly, this study also found that gender, race, housing tenure or region of residence were not associated with fraud. In the Hall, Hall and Chapman (2005) review of American studies on elder abuse, older persons who were of advanced age (>75), socially isolated or living alone, with health conditions and taking multiple medications, constrained social networks and those in middle or upper income groups were found to be at a greater risk of financial exploitation. Those living in non-private dwellings, such as nursing and convalescent homes may also be at a greater risk of financial exploitation.

The above studies focused on the relationship between individual ageing and financial exploitation. To understand the effect of population ageing upon the aggregate level of fraud in the economy, it is important to understand the prevalence of fraud victimisation across the lifecourse by understanding the shape of the age-victimisation profile. Although previous studies have provided important insights into fraud and financial exploitation of older persons generally, no study has focused explicitly on the prevalence of credit and bank card fraud among older Australians. This study seeks to fill this gap in our current understanding of economic crime in Australia. Moreover, projections of fraud are required to understand the role of population ageing on the aggregate level of fraud observed in the economy. For this reason, this paper firstly examines the relationship between age and fraud victimisation before specifically focusing upon the elderly.

Data and method

Data

Data for this study are from the Australian component of the 2004 International Crime Victimisation Survey (ICVS; Challice & Johnson 2005).

Although other Australian datasets, such as the National Crime and Safety Survey collected by the Australian Bureau of Statistics, include a large amount of detail on victims of crime, only the ICVS included measures of fraud. The ICVS included a full module on cybercrime and fraud, with 18 questions on types of fraud, frequency, reporting and financial loss due to fraud. In the first section of the module, a list of questions was asked regarding cybercrime and credit card use. The question 'When you or someone else in the household bought something over the internet by giving credit card or bank account details online, did you experience any of the following problems?

- The goods and services were not provided at all
- The goods or services did not match what was advertised
- More money was taken from your account than you agreed to

- Money was taken at another time that you didn't agree to
- Other (specify)'.

Following this was the question 'Excluding anything you have already mentioned, in the last five years, has anyone illegally used any of your credit or bank cards, or your card details to buy things or withdraw cash?'. The specificity of this question is important, as it enabled an examination of the correlates of credit and bank card fraud, disaggregated from financial crimes on the internet. The question was used to measure credit and bank card fraud in this study.

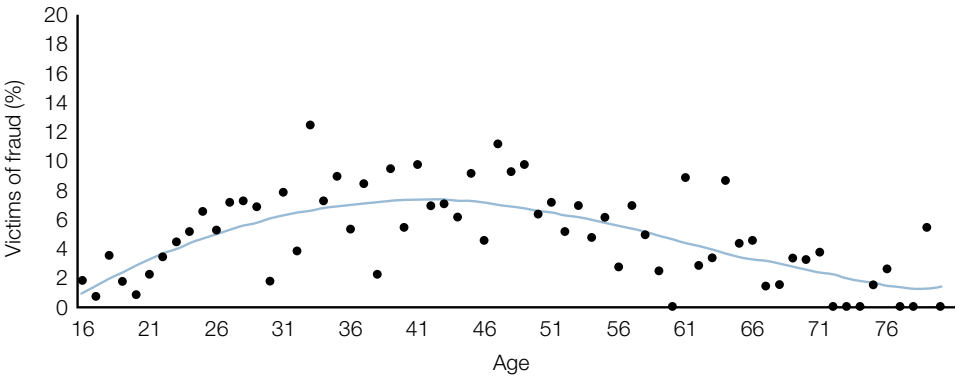
One limitation of this measure is that it may bias the estimates of credit and bank card fraud downward. Although the ICVS collected information on problems indicative of fraudulent behaviour, it did not record household access to credit and/or bank cards. More specifically, it would be preferable to disaggregate persons with a credit/bank card who reported fraud from those with a credit/bank card who did not report fraudulent activities, and from those who do not have access to any type of card. The type of card held within the household was not recorded in the ICVS and this limitation should be noted when interpreting the following results.

Method

Although the ICVS provides a rich source of data to measure the prevalence and correlates of fraud, the data present a number of challenges for researchers. First, the sample size was relatively small to measure rare events such as credit card fraud. Second, a significant number of sociodemographic variables were coded as missing in the survey. To simultaneously correct both biases a rare event logit model was used to correct for missing values.

In cases of rare events, the dependent variable is unweighted, leading to the potential for mis-specified logit coefficients. The rare event logit model used in the following analysis recorrects the parameter coefficients and results in more accurate predicted probabilities (Tomz, King & Zeng 2003). The estimation procedure provides

Figure 1: LOWESS curve of persons experiencing credit or bank fraud in the previous five years (percent)



Note: Weighted analysis
Source: AIC ICVS 2004 [computer file]

accurate logit coefficients in the presence of rare events through a technique that yields a lower mean squared error. In the case where the rarity of the event does not affect the predicted probabilities, the rare event model produces results identical to the standard logit model.

Once the rare event model was estimated, Monte Carlo simulation was used to calculate the predicted probability of fraud classified by the victim's age. The advantage of the Monte Carlo approach is that it enables the calculation of predicted confidence intervals robust to both fundamental and estimation uncertainty (King, Tomz & Wittenberg 2000). Simulated age profiles of fraud were also combined with projections of age and sex, estimated using the cohort component method.

Results

Figure 1 displays a locally weighted scatter plot smoothing (LOWESS) curve of the age profile of fraud. The relationship between age and the prevalence of credit and bank card fraud is clearly nonlinear, with the prevalence of fraud rising from age 16 to about age 41 years. Between ages 41 and 51 years, the prevalence plateaus, and decreases thereafter. This finding is important, as previous studies have lacked adequate sample size with which to estimate the prevalence of fraud across the full age distribution.

Table 1 tabulates the prevalence of credit and bank card fraud by a range of socioeconomic criteria collected in the ICVS. Results show that members of households with more than two people, and married and unmarried couples have relatively high fraud prevalence rates. Compared with those in the paid labour market, the unemployed, those who are retired or on a pension and persons studying are at a significantly lower risk of fraud. Mirroring these results, persons earning more than $600 per week are more likely to be victims of fraud than persons earning under $400 per week. It is important to note that those on lower incomes and the unemployed may be less likely to hold a credit or bank card, biasing the probability of risk. Consistent with previous studies, persons who had previously been a victim of a personal crime (robbery, theft or assault) were about twice as likely to be a victim of fraud as those who had not been a victim of a personal crime. Interestingly, there are no discernible differences in the prevalence of fraud according to gender and only a marginal difference by years of education.

An important question is whether the differences in the prevalence of credit and bank card fraud persist when the sample is split into younger and older age groups. Table 1 also tabulates the percentage of persons aged 50 and more who were victims of credit or bank card fraud across selected sociodemographic variables. Age 50 is chosen as a reference point to capture the early age at which persons in Australia can access superannuation

Table 1: Characteristics of victims of credit card fraud, 1999–2004

		% Victim	Age <50	Age 50+
Household size	1	4.3	5.5	3.3
	2	5.3	6.7	3.9
	> 2	5.8*	5.8	5.6
Gender	Male	5.1	6.1	3.4
	Female	5.4	6.0	4.2
Immigrant	Yes	5.4	6.3	4.0
	No	4.5	5.2	2.2
Marital status	Single	4.0	4.1	3.7
	Married	5.9*	7.2*	4.3
	Unmarried couple	7.4*	7.7*	5.6
	Div/sep/wid	4.4	7.9*	5.5
Activity status	Paid work	6.7	7.0	5.7
	Unemployed	3.7*	4.6	0.0*
	Home duties	5.2	5.5	4.3
	Retired/pension	2.8*	8.4	2.5*
	Studying	2.7*	2.7*	2.9
Income per week	0–$399	3.2	5.9	1.9
	$400–$599	4.0	4.9	2.6
	$600–$899	5.3*	5.8	4.2*
	$900+	8.4*	8.3	8.9*
Personal crime	Yes	3.9	4.5	3.1
	No	8.6*	9.2*	6.8*
			Mean	
Fraud age		42.1	35.9	63.4
Non fraud age		44.0*	32.7*	59.3*
Fraud education		14.5	14.5	14.3
Non fraud education		13.2	13.6*	12.5*

*statistically significant at p<.05

(about age 54). It is also important to consider this younger ageing group due to recent historical and projected changes in labour force participation rates (Productivity Commission 2005). Indeed, previous studies of the financial behaviour of older persons have selected ages between 50 and 55 to capture these labour supply and wealth effects (Butrica, Goldwyn & Johnson 2005).

Dichotomising the age variable at age 50, approximately 3.8 percent of those aged more than 50 had been a victim of credit or bank card fraud compared with about 6.1 percent of those aged less than 50 (Wald=18.56 p<0.001). The differences in bank card fraud by socioeconomic factors between the two age ranges are similar, although the statistical significance of several variables differs.

Simulated profiles of fraud

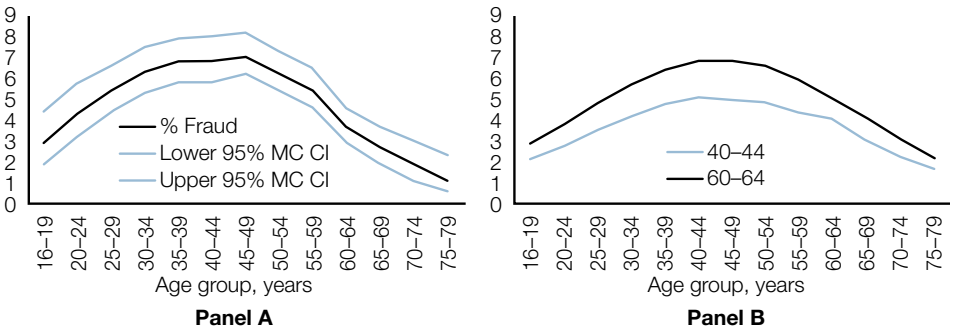
Although these descriptive findings are important, the factors associated with fraud victimisation may be confounded by other factors. For example, is the age profile of the fraud hump shape due to differential economic resources throughout the life course? Are the effects of marital status on fraud confounded by the higher level of income of couple families? To examine the factors associated with credit and bank card fraud, once controls are included, a rare event logit model was estimated as detailed earlier.

Supporting the descriptive results, higher levels of education were found to be associated with higher levels of credit and bank card fraud, but the effect is weak. Victims of personal crime were about 2.2 times more likely to be victims of fraud than persons who were not victims of a personal crime. The important relationship between income and fraud was also maintained when controls for all other factors were included. Persons in the top income group were about 2.2 times more likely to be victims of fraud than low income earners, while those in the second top income group ($600–$899 per week) were about 1.5 times more likely to be victims of fraud.

To capture the nonlinear effect of age on fraud, both age and its square term were included in the rare event regression. Results from the model provided strong support for the curvilinear relationship between age and the prevalence of bank and credit card fraud as displayed in Figure 2. The profile also exhibits a strong humped shape. The dashed lines surrounding the point estimates show the likely range of the prevalence of bank and credit card fraud, calculated using 100,000 Monte Carlo simulations of the rare event parameters. The predicted prevalence rates were calculated by allowing age to vary and setting age specific values of the socioeconomic variables to their means.

An advantage of the simulation approach used here is the ability to examine age profiles of fraud assuming certain underlying socioeconomic characteristics. More specifically, predicted probabilities (from which prevalence rates can be calculated) can be generated under different assumptions about the age composition and socioeconomic profile of the Australian population. Figure 2 compares the age profile of fraud under two assumptions. In the first, the population is assumed to have the average characteristics of a 40–44 year-old and, in the second, the average characteristics of a 60–64 year-old. Clearly, under the 60–64 year-old assumptions, the quantum (level) of fraud is significantly lower, and the tempo (or pattern) of fraud is much flatter. More specifically, the characteristics of older Australians, in terms of income, recreational behaviour, education and ethnic

Figure 2: Simulated age profiles of credit and bank card fraud



Notes: Based on 100,000 Monte Carlo simulations of the rare event coefficients. Panel B predictions are based on allowing age to vary, while setting age specific socioeconomic characteristics at the 40–44 and 60–64 year age groups

composition go a long way to reduce their risk of credit and bank card fraud.

Projections of simulated profiles

In this section, the Monte Carlo simulated profiles of fraud are combined with population projections estimated by the cohort component method, to calculate growth rates of credit card fraud in the economy (Figure 3). Obviously, such projections are limited, as unknown exogenous influences on fraud, such as changes in technology or economic shocks are uncertain. In particular, advances in credit card security may alter these prevalence rates considerably. This is simply a simulation exercise which estimates, other things held equal, the change in the numbers, and relative growth of the numbers, of fraud victims as Australia's age and sex composition changes. Over the period 2006–2031, the total prevalence of credit card fraud is projected to increase by 20 percent. Moreover, as shown in Figure 3 (Panel A), the age structure of fraud victims also becomes older. As shown in panel B, the rate of growth in the number of older fraud victims also vastly outgrows the growth in the number of younger fraud victims.

There are a number of emerging risks that may alter the age profile of fraud in the future. Importantly, Grabosky, Smith & Dempsey (2001) noted that continued globalisation, advances in technology, and the changing nature of commerce and public administration in Australia all bring with them new avenues of fraud. These authors pay particular attention to changing demography, specifically population ageing, on the future of fraud in Australia. Increasing living standards and wealth of future cohorts of the aged, as well as increasing superannuation balances held within the household (through self-managed funds) and in superannuation funds, provide a large target for potential white collar criminals. Similarly, future cohorts of the aged are more likely to be highly educated, more ethnically diverse and with a higher income, altering the risk of credit and bank card fraud. Nonetheless, these simple projections underscore a very important point: although the prevalence of fraud among older Australians is lower than among younger Australians, the projected growth in the number of the aged due to population ageing implies that a greater number of victims of credit and bank card fraud will be among the older population.

Reporting credit and bank card fraud

As the perpetrators of elder abuse are often family members or living in the same household as the victim, there is a general unwillingness to report cases of abuse (Muscat, James & Graycar 2002). Previous studies indicate that less than 15 percent of total fraud cases are actually reported. Potential reasons for this low level of reporting include guilt, embarrassment or shame at having been defrauded. Alternatively, older persons may not report financial abuse due to being unaware of services and resources for assistance (Wyandt 2004).

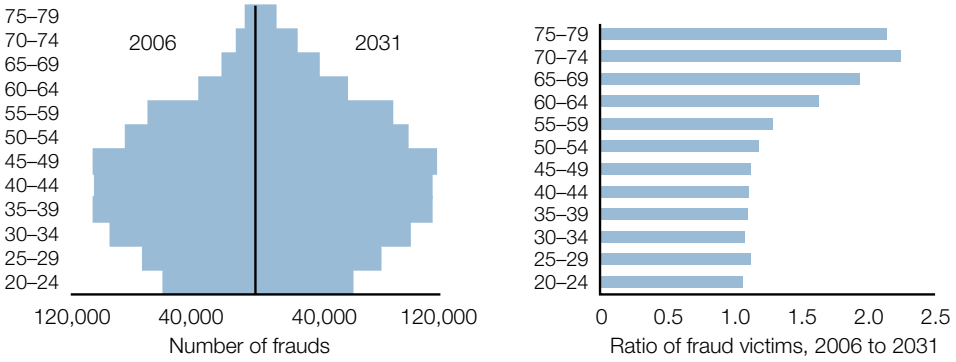
The ICVS found that, of those victims who reported fraud, approximately 70 percent reported the crime to a bank or financial institution. A further 20 percent reported to the police and less than 10 percent reported it to some other relevant agency. Importantly, between 12 and 14 percent of all fraud victims did not report the incident to any agency. Analysis shows that the pattern of reporting fraud does not differ between younger and older victims.

Conclusion

As Australia's population ages, the economic roles and expectations of older persons shift. With greater emphasis on self-provision in retirement and with future cohorts of the aged expected to experience unprecedented levels of economic wellbeing, the potential for fraud in all its forms is an important issue for policy makers. The effects of fraud can be particularly harmful to the elderly as, unlike the young, older people have less time and in many circumstances, less ability to recoup their losses (Smith 2000). Of course, there are also non-pecuniary costs, such as stress and psychological trauma caused by fraud (Lee & Soberon-Ferrer 1997).

The analyses presented here made a clear distinction between credit card fraud and population ageing, and credit card fraud and individual ageing. Firstly, the LOWESS analyses and projections of fraud provided an insight into the importance of Australia's changing age composition and the prevalence of credit card fraud. The age-victimisation curve for credit and bank card fraud displayed a strong curvilinear relationship, with the prevalence peaking in middle age and declining thereafter. Previous studies have omitted a life course approach, simply comparing prevalence among younger and older Australians. Combined with projections from the cohort component model, results show that population ageing may add to the total number of cases of credit and bank card fraud in Australia. Even though the prevalence of credit card fraud victimisation is lower among older than

Figure 3: Projected change in victims of fraud, 2006–31



Panel A **Panel B**

Note: Underlying demographic projections based on continuation of existing demographic trends: total fertility rate=1.8; annual net migration=10,000; male and female life expectancy at birth consistent with ABS projections

middle aged Australians, in the face of population ageing, larger numbers of the older community may be victims of fraud. However, many unknown factors such as improved banking security and improved consumer education may change this in the future.

A number of sociodemographic factors were found to be associated with credit and bank card fraud, including education, higher levels of income, higher degrees of recreation, and speaking a language other than English in the home.

Overall, levels of reporting of credit card crime were relatively high, with only about 12 percent of persons not reporting the crime to at least one relevant agency. However, only about 20 percent of cases of credit card crime were reported to the police, with the majority of respondents reporting the incident to their bank, with no significant difference in patterns of reporting between older and younger Australians.

Although not directly analysed in this paper, others have suggested means of limiting fraud among the elderly including a combination of legislation and law enforcement, together with educational programs for older Australians (Graycar & James 2001). As suggested by the AIC (2006), health care and social support professionals who are in contact with frail and isolated older persons may be in a position to provide information on crime prevention matters. For example, Meals on Wheels volunteers could provide printed information on measures to protect against credit card fraud and elder abuse more generally.

The specificity of the measure used in this analysis ensured that the fraud was not as a result of fraud over the internet. Further research is required on potential financial vulnerabilities of older Australians, particularly in the context of familial financial abuse and cyber fraud.

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Dr Jeromey Temple is a Research Fellow with the Demography & Sociology Program at the Australian National University.

General editor, *Trends & issues in crime and criminal justice* series: Dr Toni Makkai, Director, Australian Institute of Criminology, GPO Box 2944 Canberra ACT 2601
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