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**Individual Behavior in the Cash/Shadow Economy in
Australia:**

Facts, Empirical Findings and some Mysteries

by

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Abstract:

This paper first gives an explanation of the behaviour which motivates individuals to engage in the shadow economy. It will be shown that people who fear being caught by tax authorities will be less likely to work in the shadow economy and those who earn more money in the 'official' economy will also work less in the shadow economy. The result of a logistic regression shows that if others are seen to be engaged in the shadow economy then this increases subsequent demand for such activities. It was found that on average, a shadow economy worker earned AUS\$2135.31 during the year 2000, and households spent AUS\$2,293.00 for these services. Using micro-data to calculate an overall aggregate figure for the estimated size of the shadow economy in Australia during the year 2000, it was found that between 4.81% and 8.8% of the gross national income (GNI) was earned in the cash economy.

JEL-classification: C23, C25, D12, A26.

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1. Introduction

As crime and other underground economic activities (including the shadow economy) are a fact of life around the world, most societies attempt to control these activities through various measures such as punishment, prosecution, economic growth or education. Gathering statistics about who is engaged in underground (or criminal) activities, the frequency with which these activities occur, and the magnitude of such activities, is crucial for making effective and efficient decisions regarding the allocation of a country's resources. Given that the individuals who are engaged in these activities do not want to be identified, it is very difficult to get accurate information about these underground activities. Hence, the estimation of shadow economy activities can be considered a scientific passion for knowing the unknown. Moreover, little is known about what motivates individuals to work in the shadow economy or request such work.

Although quite a large amount of literature¹ has been published on single aspects of the hidden economy, and a comprehensive survey has been written by Schneider and Enste, the subject is still quite controversial². There are disagreements about the definition of what constitutes a shadow economic activity, there are disagreements about the estimation procedures used to estimate the size of the shadow economy and there is also disagreement of the use of these estimates in economic analysis and policy aspects.³

There appears to be strong indications that the shadow economy is increasing around the world. The size, the causes and the consequences of this increase are different for different countries, but there are some comparisons which can be made between them that might be of interest to social scientists, the public in general, and also might be helpful to politicians who need to deal with this phenomenon. There are several important reasons

¹ The literature about the "shadow", "underground", "informal", "second", "cash" or "parallel", economy is strongly increasing. Various topics on how to measure it, its causes and its effect on the official economy are analysed. See for example, the first publications by Tanzi (1982); Frey and Pommerehne (1984), and Feige (1989), survey type publications by Thomas (1992), Loayza (1996), Pozo (1996), Lippert and Walker (1997); Schneider (1994a, 1994b, 1997, 1998a), Johnson, Kaufmann and Shleifer (1997), and Johnson, Kaufmann and Zoido-Lobaton (1998a); and for an overall survey of the global evidence of its size Schneider and Enste (2000).

² Compare e.g. in the Economic Journal, vol. 109, nr. 456, June 1999 the feature "controversy: on the hidden economy".

³ Compare the opinions of Tanzi (1999), Thomas (1999) and Giles (1999).

why politicians and public sector officials should be especially worried about the size and growth of the shadow economy. Amongst the most important of these are:

- (1) If an increase in the shadow economy is caused mainly by a rise in the overall tax and social security burden, then this may lead to an erosion of the tax and social security bases and finally to a decrease in tax receipts. This will subsequently lead to a further increase in the budget deficit or to a further increase of tax rates with the consequence of an additional increase in the shadow economy and so on. Therefore an increase in the shadow economy can be seen as a reaction by individuals who feel overburdened by state activities.
- (2) As the shadow economy increases, economic policy will be based on erroneous “official” indicators (e.g., unemployment, official labour force, income, consumption), or at least indicators that are “inaccurate” in their magnitude. In such a situation a prospering shadow economy may lead to severe difficulties for politicians because it “causes” or “provides” unreliable official indicators, and the direction of the intended policy measures may therefore be questionable.
- (3) While an increase in the shadow economy provides strong incentives to domestic and foreign workers and draws resources away from the official economy, it should be mentioned that two-thirds of the income earned in the shadow economy is subsequently returned to the official economy⁴ (e.g., retail spending) resulting in a considerable positive effect on the official economy.

These concerns and the scientific fascination of the underground economy has inspired us to tackle this difficult question and undertake the challenging task of providing some empirical knowledge and insights about why people work in the shadow economy or why people request such work.

⁴ This figure has been derived from polls of the German and Austrian population about the effects of the shadow economy. For further information see Schneider (1998b). Moreover the results of these polls show that two-thirds of the value added produced in the shadow economy would not be in the official economy if the shadow economy did not exist.

Section 2 presents some basic findings of a survey which asked 7004 Australian households about their tax paying behaviour, whether they evade their taxes, and whether they work in the cash economy or request such work. Section 3 presents some preliminary findings about the factors which might motivate individuals to work (or request work) in the shadow economy. Finally, section 4 provides a summary of the major empirical findings and the conclusions that can be made from these findings.

2. Some Basic Findings of the Survey with respect to individual attitudes of the cash/shadow economy.

In May 2000, the “Community, Hopes, Fears and Actions Survey” (V. Braithwaite, ANU) was sent to 7004 Australian households. In this survey respondents were asked a broad range of questions about their experiences with the Australian Taxation Office, their tax paying behaviour, their cash transaction behaviour, their goals for an Australian society, and whether they believe the tax office acts in accordance with the standards set out in the Taxpayers’ Charter.⁵ A response rate of 29% was achieved, with 2040 households returning a completed questionnaire. Of the 2040 respondents, 118 persons (households) admitted that they had received cash-in-hand payments in the last 12 months, suggesting that 6.0% of the investigated households work in the shadow economy. In addition, 283 (or 14.4%) of the respondents said that they demanded shadow economy work (paid cash-in-hand in the last 12 months) and 29 persons (1.4%) said that they worked regularly in the shadow economy and hired shadow economy workers.⁶

Table 1 presents the income earned in the shadow economy, the money spent on shadow economy activities and the “official” income situation for shadow economy workers and those who demand shadow economy work. On average, shadow economy workers earned AUS\$2135.31 per year which is 8.82% in terms of their official income. Of the

⁵ In this paper we will only present the empirical finds with respect to cash/shadow economy attitudes; for other findings compare Braithwaite (2001).

⁶ These figures of shadow economy activities are quite low compared to European results; e.g. in a survey in Germany 24% of all respondents worked in the shadow economy and 42.5% hired shadow economy workers (Compare Schneider (1999)).

households that demanded shadow economy work, an average of AUS\$2,293.5 was spent annually, which is 5.85% of their “official” income. The average hourly wage earned by a shadow economy worker was reported to be AUS\$23.29, while the average amount of money spent for this work was reported to be AUS\$48.25 per hour. While unlikely, it appears that those demanding shadow economy work spend 107% more per hour than a shadow economy worker earns. Table 1 also shows that shadow economy workers have considerably lower incomes than those who demand shadow economy activities, with the average “official” income of a shadow economy worker being 61.7% of the average “official” income of a person who demands shadow economy work.

The services provided by shadow economy workers and the services requested by those who demand shadow economy work are shown in Tables 2 and 3 respectively. Not only do both tables show great differences in the average amount of income earned in the various jobs and the average amount of money spent in the various work areas, but also there are great differences in the frequencies of the different work/job fields. Shadow economy workers are mostly engaged to do “repair work in the house and garden” and also in the area of “teaching, training and entertainment”, whereas shadow economy work is mostly demanded in the sectors of “repair in the house and garden”, “service outside the house” and “garden work”. Both Tables 2 and 3 show that on average the highest income earned per year is in the “car delivery service sector”, with AUS\$6,089.80 being earned by a shadow economy worker and AUS\$7,498.67 being spent for this service. However, the results in both tables differ: Shadow economy workers in the area of “service outside the house” earn on average AUS\$2,370.91 per year, while demanders of this work spend AUS\$5,370.42 on average. This finding suggests that those who work in this area fail to declare the majority of their earnings. In the area of “teaching, training and entertainment”, demanders spend on average AUS\$516.66 per year, whereas workers in the same area earn AUS\$2,381.00. Besides car delivery services, shadow economy workers earn most in the area of “repair in house and garden” with an average of AUS\$3,226.11 being earned per year. The least amount is earned in the area of “farm and other services” with an average of AUS\$500.00 per year.

Table 4 presents results which investigated whether households that are engaged in the shadow economy have different attitudes to those who are not engaged in the shadow economy. These attitudes were assessed by the following two questions:

- (1) "Imagine yourself in this situation: You have been paid \$5000 in cash for work that you have done outside your regular job. You don't declare it on your income tax return. What do you think the chances are that you will get caught?"
- (2) Why do you think people work for cash-in hand payments? By cash-in-hand payments we mean cash money that tax is not paid on."

When examining the results to question 1, it can be clearly seen that people (both suppliers and demanders) engaged in shadow economy activities think that their chances of getting caught are considerably lower compared to the other respondents. For example, 33.0% of shadow economy suppliers and 32.9% of those who demand shadow economy work, think the 'chance of getting caught is about 0%' compared to 15.6% of non-shadow economy workers and 13.9% of non-shadow economy demanders. Only 9.6% of shadow economy suppliers and 8.4% of those who demand shadow economy work, think the 'chance of getting caught is about 100%', in contrast to 20.3% of non-shadow economy workers and 21.5% of non-shadow economy demanders.

Turning to question 2 responses, one explanation given by survey respondents as to why they thought people work for cash-in-hand payments is that income taxes are too high. Systematic differences between people engaged in the shadow economy and those who are not were also found. However, the differences were not as clear-cut as the differences found for question 1. Results showed that 37.7% of the shadow economy workers (suppliers) and 23.4% of those who demand shadow economy work (demanders) think that people are engaged in the shadow economy because income taxes are too high versus 19.4% of non-shadow economy workers and 19.8% of non-shadow economy demanders.

In Tables 5 to 7, the findings of other important attitudinal and socio-demographic variables are shown. Table 5 presents the findings from those people who are engaged in shadow economy work and clearly shows that, on average, cash economy workers have

considerably lower 'official' incomes than those people not working in the shadow economy (mean difference is AUS\$4,100 or 85% of a non-cash economy worker's income). However, this may be explained by the fact that shadow economy workers are considerably younger than non-shadow economy workers (average age is 38.3 years versus 48.6 years respectively), with an average of 10.4 years separating them.

Not surprisingly, shadow economy workers have had significantly more contact (roughly 10% more than the others) and conflict with the ATO. In addition, compared to non-shadow economy workers, shadow economy workers think that they and other shadow economy workers should be much less honest in declaring cash earnings. A similar result was found when measuring the attitude: "It is smart to work in the shadow economy". Shadow economy workers expressed this attitude more strongly than non-shadow economy workers. Further, in contrast to non-shadow economy workers, shadow economy workers disapprove much less of others working in the shadow economy. Interestingly, those involved in the cash economy are also more likely to have a "smart" tax agent. A smart tax agent is one who is creative and seeks out tax loopholes and the grey areas of tax, etc. Thus, in more ways than one, these people seek to reduce their tax obligations.

Table 6 presents the results for those who demand shadow economy activities compared to those that do not. It can be seen that results of these two groups are very similar. When examining the age variable, it can be seen that there is no significant difference between those who demand shadow economy work and those that do not (48.45 years versus 47.82 years respectively). Interestingly, there was no difference between the two groups when answering the attitude question "I should honestly declare cash earnings". This is in contrast to the finding for the shadow economy suppliers (see Table 5). There was also no difference between people demanding shadow economy work and those who do not in relation to the variable "has a smart tax agent". One difference that was found between these two groups of people was that those people who demand shadow economy work had considerably higher incomes than those who do not demand shadow economy work (on average 50.6% higher).

In general, the results demonstrate that there are significant differences between the attitudes of people engaged in the shadow economy and those who are not. The next section will attempt to explain what influences people to become engaged in the shadow economy.

3. A Preliminary explanation of the factors which motivate individuals to work in the Shadow (cash) Economy.

For an individual to be engaged in shadow economy activities (either on the demand or supply side), several factors play a role. Below, a number of variables have been hypothesized to play a role in influencing people to become involved in the cash economy. They are:

- 1) The income situation. *Ceteris paribus*, it would be expected that as income increased, people would demand and supply less shadow economy activities; hence a negative correlation would be expected. However, it could be the case that shadow economy suppliers compare their income situation with their neighbours, want to have a better life, and hence increase their shadow economy activities. Thus a positive correlation would also seem plausible if this were the case.
- 2) People engaged in shadow economy activities know that if they are caught by the tax authorities they will be punished; hence people who feel that the likelihood of being detected is high will be less likely to be engaged in shadow economy activities, *ceteris paribus*.
- 3) If people feel a high moral obligation to pay their taxes, they will be less likely to be engaged in shadow economy activities, *ceteris paribus*.
- 4) If people feel overburdened by state activities (e.g., high income tax) they will be more likely to be engaged in shadow economy activities, *ceteris paribus*.

- 5) Those people who need more disposable income for use on a special situation (e.g., construction of a house, second holiday, etc) will be more likely to be engaged in shadow economy activities, ceteris paribus.
- 6) Those people who are in conflict with the ATO are more likely to be engaged in shadow economy activities, ceteris paribus. The same holds for those who have a lot of contacts with the ATO.
- 7) Those people who feel they should honestly declare all cash earnings, will be less likely to be engaged in shadow economy activities, ceteris paribus. Also, those people who feel that all other people should honestly declare all shadow economy activities will be less likely to be engaged in shadow economy activities.
- 8) Those who think that people engaged in shadow economy activities are smart will be more likely to be engaged in shadow economy activities themselves, ceteris paribus.
- 9) Those people who disapprove of others working in the shadow economy will be less likely to be engaged in the shadow economy activities.

While the variables presented in points 1 to 9 above have been specifically proposed, other factors such as education, occupation, gender, marital status, and number of children may also predict whether people become involved in the shadow economy.

Table 8 presents the results of a logistic regression. With the help of this regression an attempt is made to explain the decision of individual be engaged in the shadow economy or not. The dependent variables are as follows:

- 0 work/supply shadow economy activities (n=76)
- 1 do not work/supply shadow economy activities (n=1150)

and

- 0 demand shadow economy activities (n=197)
- 1 do not demand shadow economy activities (n=1024)

The independent variables are the factors mentioned in hypotheses (1) to (9) in addition to some socio-demographic variables. If we first turn to the overall explanatory validity of these two logistic regressions, we get a Nagelkerke $R^2 = 0.289$ for shadow economy demand and $R^2 = 0.229$ for shadow economy supply; i.e. 0.289 and 22.9 % of the variance of the dependant variable is explained, respectively. For those who work in the shadow economy (results for those who request work are in brackets) we can correctly predict 14.7% (15.8%) of all cases; i.e., 12 versus 64 (29 versus 168). For those who do not work in the shadow economy (request work) we can correctly explain 99.3% (98.9%), i.e., 1142 versus 8 (1013 versus 11). Overall, for shadow economy suppliers we can predict 94.1% of all cases correctly, and 85.3% for shadow economy demanders. While these results are quite promising, the regressions have to be improved to raise the predictive role for the shadow economy workers (suppliers) and those who demand services.

If we now turn to the independent variables and their relationship to the dependent variable of interest, some results are quite interesting in that they confirm most of the hypotheses provided earlier. The variable “moral obligation to pay taxes” had no statistically significant influence on shadow economy supply or demand, whereas the variable “chances of getting caught” did have a statistically significant influence on shadow economy workers and those who demand shadow economy work. The results also show that the higher the perceived chance of getting caught, the less likely people will be engaged in the shadow economy, and the higher the income tax, the more likely it is that people will be engaged in shadow economy activities. If people need more disposable income they will demand more shadow economy activities. Having had conflict with the ATO or having had a lot of contact with the ATO had no influence on peoples’ motivation to be engaged in shadow economy activities. In addition, whether people disapproved or not of others working in the shadow economy had no influence on whether they were engaged in shadow economy activity themselves. Results also show that the more honest people are at declaring their cash earnings, the less likely they were to be engaged in shadow economy activities. In addition, if people believed it was “smart” to work in the cash economy this increased their shadow economy activities.

An increase in income, *ceteris paribus*, appeared to reduce shadow economy supply (i.e., work in the shadow economy decreases), but increased the demand for shadow economy activities—a result not consistent with our income hypothesis. The results also show that as people aged, they tended to work less in the shadow economy. Education and occupation appeared to have no influence on shadow economy activities. Men worked more in the shadow economy than women (statistically significant) but women demanded more shadow economy activities (statistically significant). The number of children one had and whether one had to pay child support had no influence on shadow economy activities and people working for the government worked less in the shadow economy (statistically significant) and demanded less shadow economy work compared to those working in the private sector.

Table 9 attempts to explain which variables predict the amount of cash money earned in the shadow economy and Table 10 attempts to explain which variables predict the amount of cash money spent in the shadow economy. Only the official income variable and the variable “choose an honest accountant” were found to predict the amount of cashed earned in the shadow economy. As predicted, the income variable was negatively correlated with the amount of cash money earned in the shadow economy. When all variables were entered into the regression analysis, the overall F-test was statistically significant, $F=2.69$, $p < 0.05$. However, only 18% ($R^2 = 0.18$) of the variation in amount of cash money earned could be explained by these variables together.

Table 10 presents the results for the money spent for shadow economy activities. Unexpectedly, official income has a positive influence on the amount of money spent on shadow economy activities and this influence was significant. The variable “taxes are too high – I have income loss” significantly predicts the amount of money spent on shadow economy activities and influences in the direction expected (i.e., positive influence). This suggests that the more money one loses through their tax burden, the more likely they are to work in the shadow economy. Again, only 8% ($R^2 = 0.08$) of the variation (see Table 10) in the amount of money spent in the shadow economy could be explained when all of the variables were entered into the regression ($F = 2.70$, $p < 0.05$). Given that the overall fit is poor, both regressions need to be improved before any firm conclusions can be made about the results.

4. A Preliminary attempt to calculate aggregate figures of the Australian shadow economy

Section 2 presented income figures of individuals who work in the shadow economy. A preliminary attempt can be made to use these income figures to calculate an aggregated figure of the shadow economy income earned in Australia. The procedure and results of this attempt are shown in Table 11 (part 1 and 2). It should be noted that in order to estimate an aggregated figure of the shadow economy in Australia, a number of assumptions have to be made. These assumptions include how many people are working in the shadow economy, how one treats the unemployed and how one treats those who retire early. Consider the officially employed workforce first. By grouping them using Australian Bureau of Statistics categories (labourers, managers, and administrators, etc), and then assuming that they are engaged in shadow economy work, an overall figure of AUS\$17.563billion or 2.86% of GNI being earned through the shadow economy can be estimated. However, this figure does not include the unemployed or those who have retired early (55-65 years of age).

By combining the unemployed and those who have retired early, there are 5,625,700 people who could potentially work and earn in the shadow economy. This poses a problem when trying to estimate how much these people can work and earn. As these groups of people have much more time on their hands they have the ability to work more. Hence, an absolute minimum figure that they could earn is the same as the shadow economy income earned by those who are officially employed. These two groups of people might also earn double or triple the amount of 'cash' income than the officially employed and these estimates are also presented in Table 11. All three of these possibilities may be plausible. Assuming that the unemployed and those who have retired early have the same shadow economy income as those who are officially employed, an aggregated figure of AUS\$29.575billion (or 4.81% of official GNI) being earned in the shadow economy by these two groups can be obtained. Assuming they earn double the cash income of those officially employed, an aggregate figure of AUS\$41.588billion (or 6.77% of official GNI) being earned in the shadow economy by these two groups can be

obtained. Finally, assuming these two groups of people earn triple the amount of cash income that those officially employed, we get an aggregate figure of AUS\$53.601 billion (or 8.75% of official GNI) being earned in the shadow economy. To get an overall indication of how much is being earned in the Australian shadow economy, one should also add the amount of shadow economy income earned from small and medium sized enterprises to these aggregated figures. An overall estimate of the shadow economy work being conducted in Australia was calculated using the currency demand approach (see Schneider & Enste, 2000) and it was found that the value is approximately 14.2% of GNI. While the aggregate results presented in this section seem plausible, it should be noted that the assumptions that were made could be criticised and hence the results should be accepted with caution.

5. Summary and Policy Conclusions

This paper has attempted to provide an explanation of the individual behaviours which motivate people to engage in the cash economy. For example, people who fear being caught by tax authorities will be less likely to work in the shadow economy and those who earn more money also appear to work less in the shadow economy. The results also show that if others are seen to be engaged in the shadow economy then this will subsequently increase the demand for such activities (i.e., “if everyone one else does it, I might as well do it too”).

Overall, the results presented in this paper showed that a shadow economy worker earned, on average, AUS\$2,135.31 in 2000 and households spent AUS\$2,293.00 for shadow economy activities in 2000. Results also showed that people engaged in shadow economy work are convinced that the probability of being caught is considerably lower than those not engaged in such activities. In addition, shadow economy workers believe more so that the tax burden is too high. This variable appears to a strong predictor for why people become involved in the cash economy. Further, people who work in the cash economy are less honest when declaring their cash earnings and believe it is ‘smart’ to work in the cash economy. These results can

also be confirmed empirically with a logistic regression analysis when using the dichotomous dependent variable (to be engaged (=0) or not engaged (=1) in the shadow economy). Finally, by using the data collected in the survey, an overall aggregate figure was calculated to estimate the degree of income earned in the cash economy in Australia for the year 2000. It was estimated that between 4.81% and 8.8% of Gross National Income (GNI) was earned through these illegal activities. Overall, it should be noted that this paper presents preliminary findings from the Community Hopes, Fears and Actions Survey and should only be seen as a first attempt at explaining the motivating factors responsible for why people engage in shadow economy activities.

Table 1: Earned Income in the Shadow Economy, money spent for the shadow economy activities and the “official” income for both shadow economy suppliers and demanders.

Statistics / Value	Annual income earned by Shadow Economy Workers in AUS\$	Hourly wage of Shadow Economy Workers in AUS-\$	Money spent per year for Shadow Economy Activities in AUS\$	Money spent per hour for Shadow Economy Activities in AUS\$	Annual “Official” Income of Shadow Economy workers in AUS\$	Annual “Official” income of those who demand Shadow Economy work in AUS\$
Mean	2135.31	23.29	2293.50	48.25	24,200.00	39,217.20
Std. Error of Mean	461.23	2.75	697.05	4.14	1,643.00	2,079.20
Median	500.00	15.00	500.00	30.00	20,000.00	35,000.00
Minimum	70.00	3.00	15.00	1.00	0.0	0.0
Maximum	30,000.00	200.00	150,000.00	450.00	100,000.00	250,000.00
Sum	215,666.00	-	580,255.00	-	2,783,000.00	10,471,000.00
Frequency (Sample Size)	101	101	253	253	115	267
Shadow Economy Activity in % of “official” income					8.82%	5.85%

Source: own calculations.

Table 2: Services offered by shadow economy workers

Service	Sample (N)	Annual income earned in the shadow economy AUS\$			
		Mean	Std. Deviation	Minimum	Maximum
1). Repair of House and Garden	18	3,226.11	7,140.23	70	30,000
2). Garden work	7	582.14	649.15	100	2,000
3). House Services	15	1,123.47	1,877.00	72	6,500
4). Service outside house	11	2,370.91	3,035.34	80	10,000
5). Car delivery services	5	6,089.80	9,634.35	400	23,000
6). Teaching, Training and Entertainment	20	2,381.00	5,190.63	100	22,000
7). Farm and other Services	3	500.00	435.89	200	1,000
8). Miscellaneous	13	1,715.38	2,569.00	100	10,000
Total	92	2,249.41	4,822.40	70	30,000

Analysis of variance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.43E+08	7	20398008.450	.868	.535
Within Groups	1.97E+09	84	23493633.561		
Total	2.12E+09	91			

Table 3: Services ordered by those who demand shadow economy work

Work Area	Sample (N)	Annual income spent in the shadow economy AUS\$			
		Mean	Std. Deviation	Minimum	Maximum
1). Repair House and Garden	84	1,648.0952	5,369.6141	20.00	48,000.00
2). Garden work	48	3,692.2500	21,588.0467	15.00	15,000.00
3). House Services	67	1,874.2687	4,005.0296	20.00	30,800.00
4). Service outside house	12	5,370.4167	15,188.2060	90.00	53,500.00
5). Car delivery services	6	7,498.6667	13,847.9282	112.00	35,000.00
6). Teaching, Training and Entertainment	6	516.6667	304.4120	150.00	950.00
7). Farm and other Services	12	7,72.4167	1,685.4417	70.00	6,000.00
8). Miscellaneous	13	1,067.3077	1,158.0670	25.00	4,000.00
Total	248	2,326.3105	10,906.8184	15.00	15,000.00

Analysis of variance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.83E+08	7	68976496.632	.573	.778
Within Groups	2.89E+10	240	120416502.28		
Total	2.94E+10	247			

Table 4: Attitudes to Tax related questions of people engaged in Shadow Economy activities versus those who are not engaged in shadow economy activities

What do you think the Chances are that you will get caught ¹⁾	Shadow Economy workers /suppliers			Shadow Economy work demanders			Income Tax too high ²⁾	Shadow Economy workers/suppliers			Shadow Economy work demanders		
	Yes	No	Sum	Yes	No	Sum		Yes	No	Sum	Yes	No	Sum
About 0% ³⁾	33.0% (38)	15.6% (283)	16.7% (321)	32.4% (89)	13.9% (229)	16.6% (318)	Definitely not	1.8% (2)	3.1% (56)	3.0% (58)	2.6% (7)	3.2% (52)	3.1% (59)
About 25%	20.0% (23)	15.4% (279)	15.7% (302)	17.5% (48)	15.5% (259)	15.7% (302)	Unlikely	11.4% (13)	12.5% (226)	12.5% (239)	16.4% (44)	11.8% (193)	12.4% (237)
About 50/50	28.7% (33)	32.2% (584)	32.0% (617)	28.4% (78)	32.7% (537)	32.1% (615)	Unsure	13.2% (15)	17.4% (313)	17.1% (328)	12.6% (34)	17.8% (292)	17.1% (326)
About 75%	8.7% (10)	16.5% (298)	16.0% (308)	13.5% (37)	16.4% (269)	16.0% (306)	Probably	36.0% (41)	47.6% (859)	46.9% (300)	45.0% (121)	47.5% (779)	47.1% (900)
Almost certain (100%)	9.6% (11)	20.3% (367)	19.6% (378)	8.4% (23)	21.5% (354)	19.7% (377)	Definitely	37.7% (43)	19.4% (349)	20.4% (392)	23.4% (63)	19.8% (325)	20.3% (388)
Total	100% (115)	100% (1811)	100% (1926)	100% (275)	100% (1643)	100% (1918)	Total	100% (114)	100% (1803)	100% (1917)	100%	100%	100%
Chi-Square Test (Pearson)	31.941 d.f. =4 Sig: 0.000			72.289 d.f. =4 Sig: 0.000			Chi-Sq.T.(P.)	22.659 d.f. = 4 Sig: 0.000			9.56 d.f. =4 Sig: 0.048		

Own Calculations. Explanations:

- 1) Question: Image yourself in this situation. You have been paid \$5000 in cash for work that you have done outside your regular job. You don't declare it on your income tax return.
- 2) Question: Why do you think people work for cash-in-hand payments? By cash-in-hand we mean cash money that tax is not paid on.
- 3) Figures in brackets represent the number of respondents.

Table 5: Significance test of continuous variables between shadow economy supply and the others.

Variable/ Attitude	Shadow Economy Supply	Sample (N)	Mean	Standard Deviation	Mean Difference	t-value ¹⁾																																																																																					
Official income (AUS\$'000)	Supply	115	24.20	17.60	-4.10	-2.29*																																																																																					
	No supply	1724	28.30	27.80			Age	Supply	117	38.30	13.40	-10.40	-8.02**	No supply	1838	48.60	15.30	In conflict with ATO	Supply	111	1.41	0.54	0.11	2.04*	No supply	1796	1.30	0.49	Has had contact with ATO	Supply	114	1.64	0.55	0.19	3.36**	No supply	1813	1.45	0.50	I should honestly declare cash earnings	Supply	118	3.11	0.75	-0.48	-6.81**	No supply	1828	3.59	0.68	Others should honestly declare cash earnings	Supply	115	2.45	0.57	-0.21	-4.07**	No supply	1828	2.66	0.61	It is smart to work in the cash economy	Supply	118	3.19	0.98	0.58	6.34**	No supply	1813	2.61	0.85	Disapproves of working in the cash economy	Supply	118	1.70	0.78	-0.45	-6.08**	No supply	1808	2.16	1.03	Has a smart tax agent	Supply	82	3.04	0.74	0.25	2.95**	No supply
Age	Supply	117	38.30	13.40	-10.40	-8.02**																																																																																					
	No supply	1838	48.60	15.30			In conflict with ATO	Supply	111	1.41	0.54	0.11	2.04*	No supply	1796	1.30	0.49	Has had contact with ATO	Supply	114	1.64	0.55	0.19	3.36**	No supply	1813	1.45	0.50	I should honestly declare cash earnings	Supply	118	3.11	0.75	-0.48	-6.81**	No supply	1828	3.59	0.68	Others should honestly declare cash earnings	Supply	115	2.45	0.57	-0.21	-4.07**	No supply	1828	2.66	0.61	It is smart to work in the cash economy	Supply	118	3.19	0.98	0.58	6.34**	No supply	1813	2.61	0.85	Disapproves of working in the cash economy	Supply	118	1.70	0.78	-0.45	-6.08**	No supply	1808	2.16	1.03	Has a smart tax agent	Supply	82	3.04	0.74	0.25	2.95**	No supply	1169	2.79	0.63								
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	No supply	1169	2.79	0.63																																																																																							

¹⁾ t-test for equality of means; equal variances not assumed, further explanations see Table 7.

Table 6: Significance test of continuous variables between shadow economy demanders and the others.

Variable/ Attitude	Shadow Economy Demand	Sample N	Mean	Standard Deviation	Mean Difference	t-value ¹⁾
Official income (AUS\$'000)	Demand	267	39.21	33.97	13.18	6.05**
	No demand	1564	26.03	25.48		
Age	Demand	280	48.45	13.62	0.63	0.69
	No demand	1664	47.82	15.67		
In conflict with ATO	Demand	272	1.43	0.58	0.14	3.72**
	No demand	1626	1.29	0.47		
Has had contact with ATO	Demand	277	1.59	0.54	0.15	4.21**
	No demand	1642	1.44	0.49		
I should honestly declare cash earnings	Demand	276	3.50	0.77	-0.07	-1.45
	No demand	1661	3.57	0.67		
Others should honestly declare cash earnings	Demand	278	2.50	0.59	-0.16	4.32**
	No demand	1659	2.66	0.61		
It is smart to work in the cash economy	Demand	277	2.86	0.87	0.25	4.47**
	No demand	1646	2.61	0.87		
Disapproves of working in the cash economy	Demand	276	1.86	0.88	-0.32	-5.47**
	No demand	1642	2.18	1.03		
Has a smart tax agent	Demand	210	2.84	0.63	-0.04	0.74
	No demand	1033	2.80	0.64		

¹⁾ t-test for equality of means; equal variances not assumed, further explanations see Table 7.

Table 7: Explanations of the meaning of the attitude variables used in Tables 5 and 6.

Variable	Explanation
In conflict with ATO (Australian Tax Office)	1 = never in conflict 2 = once in conflict 3 = mostly in conflict
Has had contact with ATO	1 = little contact 2 3 4 5 = most contact
I should honestly declare cash earnings	1 = NO! 2 = no 3 = don't know 4 = yes 5 = YES!
Others should honestly declare cash earnings	1 = NO! 2 = no 3 = don't know 4 = yes 5 = YES!
It is smart to work in the cash economy	I think people working in the cash economy are smart 1 = highly unlikely 2 3 4 5 = highly likely
Disapproves of working in the cash economy	I disapprove of people working in the shadow economy 1 = highly unlikely 2 3 4 5 = highly likely
Has a smart tax agent	1 = strongly disagree 2 = disagree 3 = neither 4 = agree 5 = strongly agree

Table 8: Logistic Regression Results (Last category is indicator). People engaged in shadow economy activities Part 1

Independent Variables	Estimated coefficients b value (Wald test)	
	Dependent Var: Suppliers of shad.ec.ac.	Dependent Var: Demand of shad.ec.ac.
Moral obligation to pay tax	0.70	1.62
1. Strongly disagree	0.47 (0.23)	0.90 (0.92)
2. Disagree	0.44 (0.53)	0.11 (0.07)
3. Neither	0.23 (0.18)	0.34 (0.80)
4. Agree	0.10 (0.09)	0.04 (0.03)
Chances to get caught	6.91	22.94**
1. About zero %	-1.14 (4.21)*	-1.43 (15.54)**
2. About 25%	-0.51 (0.74)	-1.03 (7.45)**
3. About 50%	-0.45 (0.70)	-0.52 (2.10)
4. About 75 %	-0.28 (0.19)	-0.88 (5.24)*
Income tax too high	9.86*	5.32
1. Definitely not	7.45 (0.08)	1.45 (2.98)
2. Unlikely	0.32 (0.52)	-0.19 (0.41)
3. Unsure	0.37 (0.66)	-0.09 (0.08)
4. Probably	1.02 (9.23)**	0.16 (0.51)
Want to have more disposable income	3.03	5.92
5. Definitely not	-0.84 (0.51)	-1.13 (1.39)
6. Unlikely	0.06 (0.01)	-0.07 (0.02)
7. Unsure	0.51 (0.53)	1.04 (4.04)*
8. Probably	-0.36 (1.37)	0.16 (0.74)
In conflict with the ATO 1 = never in conflict 3 = mostly in conflict	0.09 (0.18)	-0.06 (0.24)
Has had contact with the ATO 1 = little contact 3 = most contact	-0.40 (2.19)	-0.08 (0.21)
I should honestly declare cash earnings 1 = NO!! 5 = YES!!	0.70 (9.05)**	0.08 (0.31)
Others should honestly declare cash earnings 1 = NO!! 5 = YES!!	0.48 (3.71)*	0.14 (0.88)
It is smart to work in the cash economy 1 = highly unlikely 5 = highly likely	-0.05 (0.08)	-0.44 (11.92)**
Disapproves to work in the cash economy 1 = highly unlikely 5 = highly likely	0.10 (0.25)	0.04 (0.11)

Table 8: Logistic Regression Results (Last category is indicator). People engaged in shadow economy activities Part 2

Independent Variables	Estimated coefficients b value (Wald test)	
	Dependent Var: Suppliers of shad.ec.ac.	Dependent Var: Demand of shad.ec.ac.
Income and Socio-demographics		
Personal income per thousand AUS\$.03 (9.33)**	-0.01 (9.43)**
Age	.03 (6.10)*	-0.01 (0.15)
Education	6.63	7.40
1. No schooling	6.22 (0.02)	3.85 (0.30)
2. Primary school	7.19 (0.08)	0.27 (0.13)
3. Intermediate, year 10	1.19 (2.10)	0.73 (2.98)
4. Leaving, year 12	0.36 (0.23)	0.34 (0.80)
5. Trade Nursing Diploma	0.28 (0.13)	0.24 (0.40)
6. Diploma Course	0.03 (0.01)	-0.15 (0.17)
7. Uni, Tertiary	-0.12 (0.03)	-0.03 (0.01)
Occupation	9.09	8.79
1. Managers	0.13 (0.01)	-0.58 (0.89)
2. Professionals	-0.07 (0.01)	-0.81 (1.82)
3. Ass.Professionals	0.06 (0.01)	-0.65 (1.19)
4. Trade Clerical	-1.01 (2.02)	-0.79 (1.75)
5. Interm. Trade Clerical	-0.36 (0.24)	-0.40 (0.44)
6. Interm. Production, Transport	-0.22 (0.07)	-0.05 (0.01)
7. Elem. Clerical	-0.95 (1.43)	0.92 (1.00)
Gender (Male)	-0.80 (6.26)*	0.44 (4.95)*
Marital Status	0.80	11.64**
1. Never married	0.43 (0.44)	0.42 (0.75)
2. Now married, de facto	0.09 (0.03)	-0.62 (2.82)*
3. Widowed	6.26 (0.06)	-0.52 (0.70)
For whom are you working	5.72*	6.39*
1. Private company	0.53 (1.98)	0.63 (6.13)*
2. University, Government	1.05 (5.70)*	0.53 (4.15)*
How many children do you have living with you at home	1.79	1.90
1. None	-0.32 (0.13)	-0.77 (1.30)
2. One	-0.23 (0.06)	-0.70 (1.04)
3. Two	-0.09 (0.01)	-0.84 (1.52)
4. Three	0.41 (0.16)	-0.91 (1.64)
Child support	-0.05 (0.01)	0.66 (1.27)

*p<0.05; **p<0.01.

Table 8: Logistic Regression Results

Part 3

Classification Table for Shadow Economy Supply Activities

Observed	Predicted		
	Supply economy activity		Percentage Correct
	Yes	No	
Shadow. ec. Yes	12	64	15.8
No	8	1142	99.3
Overall Percentage			94.1

Nagelkerke R = .289

Chi-square = 139.15**

Classification Table for Shadow Economy Demand Activities

Observed	Predicted		
	Demand economy activity		Percentage Correct
	Yes	No	
Shadow ec. Yes	29	168	14.7
No	11	1013	98.9
Overall Percentage			85.3

Nagelkerke R = .229

Chi-square = 175.78**

Logit Regression - Dependent variables:

- 1) People working in the shadow economy (suppliers) = 0
People not working in the shadow economy (suppliers) = 1
- 2) People demanding shadow economy activities (demand) = 0
People not demanding shadow economy activities (demand) = 1

Table 9: Regression (OLS) result for Cash Income from Shadow Economy Supply.

Independent Variables	b value	beta value	t value
Official income	63.971	.260	2.52*
Sex	-459.315	-.052	-0.53
Age	29.728	.093	0.86
Marital status	18.351	.003	0.03
How many children	650.815	.176	1.83
Education	-338.298	-.114	-1.13
Child support	3145.500	.148	1.71
I should honestly declare cash earnings	747.883	.128	1.19
Others should honestly declare cash earnings	176.150	.022	0.23
High tax leads to loss of income	486.221	.105	1.01
Occupation	-19.386	-.008	-0.08
Jobs for shadow economy activities	52.329	.030	0.33
Work status	95.255	.019	0.19
Are you paid fairly	-209.149	-.056	-0.60
Choose an honest accountant	-2159.541	-.382	-4.30**

Adjusted R² = .18. F = 2.69**.

¹ The b and beta coefficients from an ordinary least squares regression model (enter procedure). Dependent variable: Cash income from Shadow Economy Supply - Total Sample (118 = Shad. Ec. Suppliers; Non-shad. Suppliers = 1822).

Table 10: Regression result for money spent for Shadow Economy Demand.

Independent Variables	b value	beta value	t value
Official income	74.130	.240	3.43**
Sex	862.452	.042	0.89
Age	25.007	.033	0.47
Marital status	-277.984	-.017	-0.26
How many children	1038.653	.118	1.89
Education	-627.267	-.102	-1.56
Child support	-1150.489	-.019	-0.31
I should honestly declare cash earnings	-304.158	-.023	-0.36
Others should honestly declare cash earnings	51.848	.003	0.05
High tax leads to loss of income	1739.676	.160	2.68**
Occupation	-88.982	-.013	-0.21
Jobs for shadow economy activities	-216.595	-.041	-0.71
Work status	689.695	.059	0.88
Are you paid fairly	240.432	.026	0.42
Choose an honest accountant	-2130.900	-.131	-2.15*

Adjusted $R^2 = .08$. $F = 2.70^{**}$.

¹The b and beta coefficients from an ordinary least squares regression model (enter procedure). Dependent variable: Cash Economy Demand (283 persons who demand, 1757 who do not-demand).

Table 11: Some basic calculations of an aggregate figure of the shadow economy in Australia for the year 2000.
Part 1

Occupation	Number of people working in the Shadow Economy (1)	Q'naire Sample		Mean income earned in the Shadow Economy (AUS\$)	Number of officially employed people (,000s)	Total amount of Shadow Income earned in '000 (AUS\$)	Total Shadow economy income (%)
		Number of people <i>not</i> working in the shadow economy (2)	(1)/(2) in %				
Managers and Administrators	7	185	0.04	1,267.14	643.50	815,404.59	
Professionals	18	363	0.05	1,535.00	1,646.20	2,526,917.00	
Ass. Professionals	10	206	0.05	3,670.00	1,037.90	3,809,093.00	
Trade, Clerical	24	217	0.11	3,478.13	1,588.00	5,523,270.44	
Interm. Trade, Clerical	12	278	0.04	1,360.00	1,599.90	2,175,864.00	
Interm. Production Transport	4	123	0.03	1,937.50	776.70	1,504,856.25	
Elem. Clerical	8	108	0.07	931.25	911.20	848,555.00	
Labourers	4	94	0.04	424.75	846.10	359,380.98	
Total				14,603.77	9,049.50	17,563,341.26	2.86%
Average				1,825.47			

Table 11: Some basic calculations of an aggregate figure of the shadow economy in Australia for the year 2000.
Part 2

Variable	Number of unemployed and early retired pensioners	Mean Y Shadow Ec. (AUS\$) ¹⁾	Mean Y Shadow Ec. DOUBLE (AUS\$)	Mean Y Shadow Ec. TRIPLE (AUS\$)	Shadow economy income of the unemployed and early retired pensioners (AUS\$)	Shadow economy income of the unemployed and early retired pensioners DOUBLE (AUS\$)	Shadow economy income of the unemployed and early retired pensioners TRIPLE (AUS\$)
	5,625,700.00	2,135.31	4,270.62	6,405.93	12,012,613,000.00	24,025,227,000.00	36,037,840,000.00
Shad. Ec. Y of the workers					+17,563,341000.00	+17,563,341000.00	+17,563,341000.00
Total Shad. Ec. Y					29,575,954,000.00	41,588,568,000.00	53,601,181,000.00
					Shad.Ec.Y in % of GNI	Shad.Ec.Y in % of GNI	Shad.Ec.Y in % of GNI
					4.81%	6.77%	8.73%

¹⁾ Value from table 1 was taken, because it represents a bigger sample of shadow economy supplies (101 versus 87 from table 11 part 1).

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