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Fiscal Misperceptions Associated with Tax Expenditure Spending: The Case of Pronatalist Tax Incentives in Singapore

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Abstract

Tax expenditures are a potentially expedient means through which politicians can implement spending programs that target benefits at a select few while ensuring that the cost and distributive effects of such programs remain largely imperceptible to the majority. This paper reports the results of an exploratory study to assess the extent and determinants of public awareness of pronatalist tax policy in Singapore, and of public perceptiveness of the cost and distributive outcomes of these pronatalist tax incentives. It is found that survey respondents largely are aware of the existence of the incentives. However, there is widespread ignorance (if not misperceptions) of the spending implications and hidden cost associated with these incentives and of their distributive biases along eugenic, income and ethnic dimensions. Non-beneficiaries of the tax expenditures not only are less likely to be aware of the existence of the incentives, they are also less likely to be perceptive of the distributive effects. Overall, the empirical findings are a testimony to why the tax expenditure route has proven to be such a politically expedient way for the Singapore Government to implicitly pursue its policy of selective pronatalism.

INTRODUCTION

Voters' ability to accurately perceive the burdens and benefits associated with tax and spending decisions underpins the effective working of any system of taxation by democratic government. The important role of fiscal consciousness in affecting fiscal choice has motivated extensive and wide-ranging empirical research. Surveys have been carried out to investigate public consciousness of various aspects of the fiscal system, including knowledge of taxes and spending programs[1], consciousness of tax burdens and the benefits from public expenditures[2], and cognisance of the fiscal

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[1] For instance, based on surveys of public knowledge of the tax system in the US, Page (1983), Hansen (1983), and Steel and Lovrich (1993) concluded that people know very little and that there are widespread misconceptions about federal, state and local taxation. In the UK, Cullis and Lewis (1985), and Cullis and Jones (1987) found widespread voter ignorance of sources of government revenue, with income tax being the relatively more visible tax. Schokkaert (1988) surveyed voter knowledge of local government financing in a Belgian municipality while in the Netherlands, Francken (1986) examined public knowledge of government contributions to the costs of providing semi-collective public services in the form of legal advice, public transport and hospital services.

[2] Early studies into taxpayer consciousness of their burdens under the US federal personal income tax include Enrick (1963 and 1964), Van Wagstaff (1965) and Gensemer et al (1965). A more recent study, Fujii and Hawley (1988), found no evidence of systematic misperceptions of personal marginal income tax rates. Marginal income tax rate consciousness was also the subject of a study in the UK by Lewis (1978), who reported an underestimation in general of the tax rates. Gemmell et al (2003) relied on micro survey data to investigate public consciousness of the additional income tax and value added tax (VAT) liabilities that households had to pay under certain alternative specified changes in tax rates.

connection between the benefits of public sector output and the tax costs of such output[3]. Econometric analyses of archival data[4] as well as experimental research techniques[5] have also been used to investigate the extent, sources and consequences of fiscal illusion. Fiscal illusion (which potentially results from the lack of fiscal consciousness) is described in the literature (e.g. Oates, 1988) as voters' systematic misperception of important fiscal parameters, leading possibly to their inability to make informed decisions and hence the distortion of their fiscal choices. Various structural or institutional elements of the fiscal system have long since been identified as potentially contributing to fiscal illusion (see e.g. Puviani, 1903 and Buchanan, 1967). These include the following: fragmentation of the budgetary process into taxing and spending decisions; diversity in the government's revenue base (including the relative importance of non-tax revenues in the form of debt and inter-government grants); and lack of visibility of taxes or tax increases owing to reasons such as the income elasticity of the tax system, reliance on indirect taxes that are hidden in prices or otherwise ambiguous in incidence, administering tax collections by requiring tax to be withheld at source or by spreading out tax payments over time, etc.

One aspect of fiscal consciousness where relatively little research appears to have been done concerns the potential illusory effects associated with the use of tax expenditures as a means of public spending. Since the seminal work of Surrey (1973), much has been written to conceptualise the idea of a tax expenditure as being equivalent to a direct spending program, as well as to underscore the need for, and to put into effect, processes for the budgetary oversight of tax expenditure spending. Hardly any research, though, has been done to study public perceptions and consciousness in connection with the use of these tools of government spending. In

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They found that there was fairly extensive ignorance of personal income tax and VAT liabilities. Contrary to the usual fiscal illusion hypothesis, there was overestimation (rather than underestimation) of tax costs, particularly for the relatively less visible VAT.

[3] Studies (see Lewis, 1982; and Furnham and Lewis, 1986 for reviews) generally have found a failure on the part of voters to translate public service benefits into tax costs and that there is the lack of a fiscal connection between choices made on taxes and those on public spending. Winer (1983) suggests that the separation of taxing and spending decisions characteristic of most representative democracies may generate fiscal illusion and contribute to increased public spending.

[4] These studies use field data, typically at local government level, to establish the validity of various hypotheses of fiscal illusion. For instance, the revenue complexity hypothesis postulates that the complexity and lack of transparency of sources of public financing cause voters to systematically underestimate the tax price of public sector output, in turn, leading to excessive demand for such output and an increase in the size of the public sector. See Oates (1988), and Dollery and Worthington (1996) for a review of the theory and empirical work relating to this and other fiscal illusion hypotheses. The findings from such studies have been viewed with some scepticism for a number of reasons. They do not observe the magnitude of voter misperceptions directly but rather rely on highly aggregated proxies to represent fiscal complexity and, by implication, the extent of fiscal illusion. Furthermore, they fail to show unambiguously that the alleged distortion of fiscal choice is a consequence of fiscal illusion. As a response to these criticisms, some recent studies have relied on surveys (e.g. Gemmell et al, 2003 and 2004) and experimental designs (e.g. Sausgruber and Tyran, 2004) in order to measure tax misperceptions directly and to incorporate these into formal models of the demand for public expenditures or models seeking to explain voters' preferences amongst alternative changes to the existing tax structure to finance public expenditure increases.

[5] Using an experimental design to investigate the causes and consequences of tax burden misperceptions, Sausgruber and Tyran (2004) found that the tax burden associated with an indirect tax is systematically underestimated but no such systematic misperception occurred with an equivalent direct tax. They also found that in the indirect tax scenario, illusion-prone participants were more likely, compared to under the direct tax, to approve of an expenditure (redistribution) proposal that was not in their material self-interest.

this regard, some specific issues that are rarely addressed empirically include the following:

1. To what extent is there public cognisance of the hidden (opportunity) cost associated with tax expenditure spending and, hence, of the equivalence between a tax expenditure and a direct expenditure in the sense that both are spending programs that entail effectively an allocation and re-distribution of public resources?
2. To what extent is there public consciousness of how benefits are distributed under particular tax expenditure programs?
3. Who are more likely to be cognisant or conscious of the matters referred to above? For instance, is there any difference in perceptiveness, say, between beneficiaries and non-beneficiaries of the spending program?

The issues outlined above are important from a public choice perspective. If voters, on the whole, are ignorant of the equivalence between a tax expenditure and a direct expenditure and, hence, are imperceptive to invisible spending through the tax system, politicians will be better able to conceal spending programs by structuring them as tax expenditures. Such concealment may be motivated by the desire to have the public sector appear small or to hide potentially unpopular spending programs such as those targeted at vested interest groups or those entailing a distribution of benefits that is likely to be contentious. Such covert spending strategies will meet with relatively less public resistance, particularly in the absence of tax expenditure reporting and where non-beneficiaries of the tax expenditure programs are not conscious of the costs of such spending and of how the benefits are distributed. In other words, if widespread misperception persists that a tax expenditure program is costless (or if the costs are underestimated) and if the distribution of the benefits is obscured, fiscal choice is potentially distorted since, in the absence of such misperception, voters may well have objected to the spending program.

The present paper makes an initial attempt at filling the gap highlighted above in the fiscal consciousness literature. It presents the results of an exploratory survey research on the extent and determinants of fiscal misperceptions arising from the use of tax expenditures to deliver pronatalist subsidies to married couples in Singapore. The remainder of the paper is organised as follows. Section 2 presents a policy tools approach in considering the political and administrative reasons behind the use of tax expenditures (vis-à-vis direct subsidies) as an instrument of fiscal spending. It reviews the literature on the political economy of tax expenditure spending and the few existing theories that speculate on the likely level of public consciousness of the costs and distributive effects of tax expenditures. Section 3 describes the pronatalist tax incentives in Singapore and the political, fiscal, social and institutional contexts within which the incentives operate. Sections 4 and 5 present respectively the methodology and the findings of the study. Conclusions and directions for future research are contained in Section 6.

TAX EXPENDITURES VERSUS DIRECT SUBSIDIES: A POLICY TOOLS ANALYSIS

This section presents a policy tools approach[6], advocated by writers such as Salamon (1981), Hood (1986), and Salamon and Lund (1989), in considering some of the political and administrative factors that favour the use of tax expenditures as an instrument of fiscal spending. Both a direct subsidy and a tax expenditure confer a fiscal benefit by lowering for the targeted beneficiary the relative cost of undertaking the favoured activity. However, while a direct subsidy entails a disbursement out of the government's revenue, a tax expenditure operates through the government's forbearance in the first instance to collect tax revenue otherwise due under the normative tax structure. There is therefore the absence of an audit trail in the traditional budgetary accounts linking the fiscal spending to an explicit expenditure of government revenue. This fusion of the government's taxing and spending functions can be a source of fiscal illusion if the spending implications are not generally perceived.

Much of the traditional literature on tax policy design (e.g. Report of the Royal Commission on Taxation, 1966; Bittker, 1967; Pechman, 1977) argued for the removal of spending programs from the tax system in order to preserve a comprehensive tax base for tax neutrality, fairness and simplicity. Broadening the tax base was indeed one of the main features characterising tax reforms worldwide in the 1980s and early 1990s (US Department of the Treasury, 1984; Sandford, 1993). The idea of spending through the tax system was given prominence from the late 1960s by Surrey's conceptualisation of the term 'tax expenditure'. Since then, much has been said (e.g. Surrey and McDaniel, 1985) about the hidden cost and lack of public accountability associated with tax expenditure spending[7] as well as other supposed deficiencies of tax expenditures such as their 'windfall' and 'upside-down subsidy' effects.[8] More recent contributions, such as Toder (2000), and Weisbach and Nussim (2004), have acknowledged that many of the alleged problems with tax expenditure spending are actually criticisms of the content and design of the underlying spending programs rather than of the use of tax expenditures per se as the means to deliver those

[6] The policy tools approach entails the study of the political economy of policy tools, and advocates shifting the focus of policy analysis from individual programs and policies to the generic tools or instruments of government action (Salamon, 1981).

[7] Tax expenditures represent legal entitlements that, once enacted, tend to be relatively permanent features of the tax system divorced from regular parliamentary review and budgetary oversight. Unlike direct expenditures, tax expenditures do not compete for fiscal resources, are not subjected to annual reviews and authorisations, and are infrequently subjected to efficiency/effectiveness audits. The hidden nature of tax expenditure spending erodes government accountability for the underlying use of public resources. Furthermore, the cost, level of benefits and distribution of benefits under a tax expenditure program (other than a refundable tax credit) are inherently affected by changes in the incidence of the tax, in turn, resulting from changes in the fiscal characteristics of the taxpayers and/or in the tax rate structure or other provisions of the tax code. Tax expenditures are, in this sense, open-ended commitments since their costs (and effects) can change even without any explicit program decisions taken to amend the relevant legislation regulating the tax expenditures.

[8] The windfall effect results from a tax expenditure rewarding behaviour that would have been undertaken anyway even in the absence of the incentive. Like many of the other alleged deficiencies of tax expenditures, this effect is not necessarily peculiar to tax incentives but may also apply in the case of direct subsidies.

The upside-down subsidy effect (i.e. benefits are distributed amongst beneficiaries in an income-regressive manner) arises in the case of a tax expenditure structured as a reduction in the tax base (or as a non-refundable tax credit) in a tax system characterised by a progressive rate structure. This deficiency is overcome by structuring the tax expenditure as a refundable tax credit.

programs. These deficiencies therefore may be overcome by appropriate design of the tax expenditure provisions, and by subjecting tax expenditure proposals and legislation to formal budgetary control and periodic review. In short, there appears to be no reason why tax expenditures cannot be designed to replicate the effects of direct subsidies on resource allocation and income distribution. However, tax expenditures do differ from direct expenditures in that different government agencies or departments are vested with jurisdiction over the spending programs – a tax expenditure program inevitably requires the involvement of the tax administration whereas a direct expenditure program is administered by a separate spending agency. Weisbach and Nussim frame the question of whether a spending program should be implemented through the tax system or via a direct expenditure program as one of institutional design, wherein the concern should be with how best to implement overall government policy rather than focussing merely on tax policy design considerations in isolation. More specifically, a spending program should be implemented as a tax expenditure if the benefits of coordination resulting from integrating the program with the tax system exceed the benefits of specialisation resulting from the administration of the program by a separate agency with the requisite expertise to better evaluate applications and allocate resources. In line with this, Toder suggests that a tax expenditure is a particularly suitable means to implement a spending program if:

- the program seeks to encourage a clear and broadly defined activity where objective eligibility criteria can be established so that there is little need for administrative discretion or expert judgement to determine eligibility and the amount of benefits to be dispensed;
- the eligibility criteria can be framed with reference to measures for which data is already reported in tax returns (e.g. eligibility based on taxable income or other fiscal circumstances); and
- the annual tax-reporting period is an appropriate time frame (or may be suitably adapted) for determining eligibility, benefit levels and timing of payments under the program.

Apart from the administrative considerations above, there may also be perceptual differences associated with the different modes of fiscal spending. Voters may perceive differently the value, the distribution and the cost of the benefits delivered through the tax system as opposed to through a direct subsidy. The ability to perceive the cost and distributive implications may also differ between the few who benefit from the spending program and the vast majority of taxpayers in general (non-beneficiaries) who effectively fund that program. There has not been all that much literature that addresses the psychological aspects of tax expenditures. One strand of literature addresses the issue from the perspective of recipients of tax subsidies, and contends that subsidies delivered through tax expenditures are more likely to be better received because these subsidies are less likely to be seen as a form of government assistance compared to direct subsidies. For instance, Woodside (1983 and 1986) suggests that the indirectness and relative invisibility of tax expenditure spending permit such forms of government intervention to be perceived as less intrusive on the private sector and less easily associated with the government. Similarly, Surrey and McDaniel speculate that beneficiaries of tax expenditure programs psychologically may feel that they are not recipients of state subsidies because they perceive tax

subsidies to be no more than allowing them to retain what is essentially their own money.

There has also been some attempt to explain the psychology behind tax expenditures based on what decision theorists refer to as the endowment effect, i.e. that people systematically value opportunity costs less than equivalent out-of-pocket costs. If voters are susceptible to the endowment effect, they will value the opportunity cost (in terms of foregone tax revenue) associated with a tax subsidy less than the explicit cost of funding an equivalent direct subsidy. This is on account of the fact that a tax subsidy, unlike a direct subsidy, does not entail any explicit outflow of money from the Treasury to recipients of the subsidy. The implication is that voters in general will perceive a tax expenditure as involving a smaller effective sacrifice or expenditure of public resources compared to an equivalent direct subsidy. Furthermore, Shaviro (1990) argues that not everyone is equally susceptible to the endowment effect – beneficiaries of tax subsidies are likely to be less susceptible to this bias than non-beneficiaries. The result is that beneficiaries generally are able to perceive the benefits that they enjoy from a tax expenditure whereas non-beneficiaries will be less perceptive of the spending implications and will either fail to perceive or, at the very least, underestimate the cost of those benefits in terms of the tax collections foregone. Hansen (1983) makes a similar assertion that the benefits under a tax expenditure program tend to be highly visible to beneficiaries targeted by the program but virtually invisible to non-beneficiaries. She further contends that the total costs of the overall program will be hidden from both beneficiaries and non-beneficiaries alike.

The psychological considerations discussed above have implications on program implementation from a political or public choice perspective. They underscore the political invisibility of tax expenditure spending in terms of its hidden costs[9] and in terms of non-beneficiaries' inability to perceive the benefits enjoyed by beneficiaries. If these contentions are valid, then from a public choice perspective, tax expenditures offer a politically expedient means of concealing spending programs that voters may otherwise find objectionable if implemented in the full glare of a direct expenditure program. Various motivations may be behind such covert spending through the tax system. For instance, politicians may wish to reward political patronage by targeting spending programs that favour a minority or special-interest group without imposing any perceived cost on the majority.[10] They may desire to foster the illusion that the public sector is smaller than the true extent of the government's allocative and

[9] The identification and estimation of tax expenditures in tax expenditure reports in many jurisdictions have since led to their increased political visibility. Even so, tax expenditure reporting in many of these jurisdictions has not been fully integrated into the annual budget appropriations process and systematic legislative review of tax expenditures through the formal budgetary process has not been widely instituted (OECD, 1996). For a more recent paper on the situation in Australia and Canada, see Wanna (2003).
Notwithstanding the institution of tax expenditure reporting, if voters at large continue to be unable to appreciate the spending implications of tax expenditures, politicians will continue not to be pressured into reducing such hidden spending. Indeed, the experience in the US has been that despite tax expenditure reporting, tax expenditures have proliferated and very few of them have actually been eliminated (Steurle, 1995).

[10] Zelinsky (1993) offers a different view. He argues, from a US perspective, that tax institutions are exposed to more competitive and visible political processes given the numerous and diverse constituencies they serve. This is unlike the specialised and limited clientele served by institutions that design and administer direct expenditure programs. Accordingly, tax institutions are less susceptible to interest group capture and better positioned to make decisions informed by expertise.

distributive interventions since the use of tax expenditures, instead of direct subsidies, enables lower taxes and lower spending to be reported in traditional budgetary accounts.[11] Spending through the tax system may also be undertaken to pursue certain economic, social or even ideological goals that entail controversial or unpopular re-distributive effects. Implementing a spending program by way of an income tax deduction or non-refundable tax credit is an administratively convenient and politically expedient way to conceal regressively targeted benefits in view of the inherent 'upside-down subsidy' effect brought about by progressivity in the income tax rate structure. In recent literature, Sullivan (2000), and Collier and Luther (2003) attributed some of the above reasons as motivations behind tax expenditure spending by the Clinton Administration in the US and the Thatcher Administration in the UK respectively.[12] People's inability to fully understand the distributive implications of tax deductions has been empirically shown by Baron and McCaffery (2004) in two recent experimental studies conducted on the World-Wide Web. They found that many participants who favoured tax deductions as a means of government provision of various goods and services had either ignored or failed to consider the fact that, given a progressive tax rate structure, tax deductions will benefit the rich relatively more than the poor. Participants' tendency to favour tax deductions was contrary to their preferences in support of redistribution from the rich to the poor. When these participants were informed of the effects of tax deductions, they became less likely to favour the use of the deductions. However, the drop in support for the deductions was only moderate, indicating that many of these participants continued to misunderstand the effects of the deductions.

To the author's best knowledge, there has not been any empirical validation of whether and, if so, to what extent the endowment effect or other cognitive biases contributes to any perceptual differences between a tax subsidy and an equivalent direct subsidy.[13] There has also not been any empirical work investigating the extent and determinants of public consciousness of and misperceptions associated with the costs and distributive outcomes of tax expenditure programs, an issue which is explored in this paper. Empirical testing of any hypothesis of fiscal misperception in this regard probably has to be undertaken on a case-by-case basis to evaluate the validity of the theory as it applies to specific tax expenditure programs in particular jurisdictions.[14] Conclusions drawn from any one such study may well have limited

[11] Shaviro (2004) refers to this as 'spending illusion', i.e. the confusion between the actual size of government and the nominal dollar flows between the government and the private sector that are denominated as 'taxes' and 'spending'.

[12] Sullivan describes the Clinton Administration's pervasive use of the tax system to implement spending programs as 'tax expend' liberalism and attributes such a strategy to political expedience.
Collier and Luther describe how the Thatcher Administration used tax expenditures to promote the supply side changes that were integral to its economic and ideological policies. The significant reliance on tax expenditures occurred despite the well-known stand of the Conservatives in advocating tax neutrality, reduced government intervention, and free-market forces, and despite the advent of tax expenditure reporting in the UK. The authors also emphasised that the various programs, many of which conferred the most benefits to the richest individuals or in respect of the most expensive properties, would not have been politically acceptable had they been implemented through payment of direct monetary subsidies.

[13] There are, however, studies exploring the cognitive biases at play in different framing situations that compare a tax subsidy with an equivalent policy framed as a tax penalty – see Traub and Siedl (1999), and McCaffery and Baron (2004).

[14] Such an approach is recommended by advocates of policy tools analysis in order "to relate the characteristics of tools to actual program operations and outcomes" (Salamon, 1989, p 261).

generalisability given the specific nature, objectives and structure of the particular tax expenditure program studied and in view of jurisdictional-specific variables that may have a bearing on the general level of fiscal consciousness. This paper presents one such specific inquiry in investigating the extent and determinants of fiscal misperceptions arising from the use of tax expenditures in the context of pronatalist policy in Singapore.

PRONATALIST TAX POLICY IN SINGAPORE

Fertility rates in Singapore declined dramatically between the 1960s and the mid 1970s as a result of social and cultural transformation brought about by economic development, the availability of labour market participation opportunities for women, and a comprehensive antinatalist policy on the part of the Government. However, persistent below-replacement fertility rates in the 1980s led to fears that a shrinking and ageing population would adversely affect the sustainability of economic growth and the adequacy of existing health-care and social support systems. Furthermore, a trend emerged whereby many highly educated women were either remaining single or marrying later and having significantly fewer children than their less-educated counterparts. This raised concerns that the higher-educated and more talented strata of the population were not adequately replacing themselves.[15] These concerns led eventually to a reversal in the national fertility policy in the 1980s from one of antinatalism to one of selective pronatalism, with various specific financial and non-financial incentives announced in 1984 and 1987.[16]

The 1984 changes consisted of eugenic measures aimed at improving the quality of the population. These measures were an attempt at correcting the observed lopsided fertility pattern mentioned above and were founded on the rather controversial premise that the intelligence of the child is primarily inherited and principally determined by the parents' educational attainments. The 1987 changes were more extensive and involved relaxing some of the existing antinatalist measures whilst introducing certain new pronatalist initiatives in a bid to encourage third- and fourth-order births from couples who could afford the long-term financial commitment of having more children. The emphasis on affordability reflected the stand that parents remain primarily responsible for the upbringing of their children and that any pronatalist intervention on the part of the government should not therefore result in short-term incentives for low-income couples to have more children at the expense of longer-term social ills and a strain on public welfare resources.

By predicating the pronatalist policy on the basis of affordability, two other certainly more contentious social engineering goals could be implicitly pursued. Firstly, because higher-income couples generally also possess higher educational qualifications (a proxy measure for natural talent and intelligence), the incentives introduced in 1987 were consistent with the eugenic policy of encouraging higher fertility amongst the better-educated, and presumably more intelligent and talented, strata of the population. The 1984 changes, which explicitly addressed the eugenic

[15] This observation was first given political prominence by the then Prime Minister, Lee Kuan Yew, in his 1983 National Day Rally speech. He noted the strong negative correlation between a married woman's fertility and her educational attainment. For instance, based on 1980 population census data, women with little or no formal education had 3.5 children on the average compared to just 1.6 children for women who were university graduates.

[16] See Saw (2005) for a comprehensive account of the measures introduced.

concerns, had resulted in a vehement public debate, widespread resentment, and even protest votes cast against the governing political party at the 1984 General Elections. One particularly castigated measure was the Graduate Mother Priority Scheme, which gave priority in the primary school registration process to children whose mothers were university graduates with at least three children. This measure was widely seen as symbolic of the elitism associated with the policy changes in 1984. It attracted widespread adverse public opinion, including resentment from graduate mothers themselves, and had to be abolished just one year after its introduction. The subsequent fertility policy changes in 1987 dropped the explicit reference to eugenic considerations although this goal was still pursued, albeit implicitly, through tax expenditures that targeted the fertility incentives mainly at higher-income couples.

The second goal implicitly pursued by predicating the pronatalist policy on parents' affordability was the correction of the fertility imbalance between the two main ethnic groups, i.e. the Chinese and the Malays. The Chinese, who make up the significant majority of the population, have the lowest fertility rate whereas the Malays, who form the largest minority ethnic community, have the highest.[17] The Malays generally also have lower incomes and lower educational attainments compared to the Chinese. By targeting benefits mainly at higher-income and better-educated couples, the inherent effect of the various policy changes was to encourage more births from the Chinese in an implicit attempt to address the fertility imbalance between the two ethnic groups.[18]

At the time of the survey reported in this paper (December 2001), the main pronatalist tax expenditures in Singapore (which essentially evolved from the 1984 and 1987 policy announcements) consisted of the Enhanced Child Relief (ECR) and, more importantly, the Special Tax Rebates (STR).

ECR was introduced to encourage educated married women to have children whilst remaining economically active. It took the form of an annual income tax deduction that could be deducted only against the tax-assessable income of the child's mother. Furthermore, the mother would be eligible for ECR only if she possessed at least the prescribed minimum educational qualification.[19] The annual ECR deduction per child (up to the fourth child of the family) was a stipulated percentage of the mother's annual earned income[20], and this percentage increased (from 5% to as high as 25%) with the birth-order of the child.

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[17] Based on population census data, the Chinese made up 77.7% of the resident population in 1990, compared with 14.1% and 7.1% respectively for the Malays and the Indians. In that same year, the total fertility rate of the Chinese was 1.71 compared to those of the Malays and Indians at 2.73 and 1.99 respectively. Furthermore, the Chinese (especially Chinese female university graduates) also had the lowest marital rate and, amongst those who did marry, had the highest age at the time of marriage.

[18] Although this aim obviously was not explicitly stated as an objective of the pronatalist policy, the Singapore Government did express its observation and concern that the decline in overall fertility was largely attributed to the fact that the Chinese were not replacing themselves (The Straits Times, 15.12.1986 and 2.3.1987).

[19] In 2001, the minimum educational qualification was three passes at the General Certificate of Education Ordinary Level (GCE 'O' Level) examinations, or equivalent qualifications.

[20] 'Earned income' refers to the sum of business income, employment income, and taxable pension income, reduced by any allowable business losses. Mothers who were not economically active would not have any earned income and, accordingly, would not have benefited from ECR.

STR took the form of non-refundable tax credits that could be set off against the gross income tax liabilities of the eligible parent/s over a stipulated number of years. These tax credits were first introduced in 1987 in respect of the third child of the family born in/after that year. The incentive was subsequently extended to the fourth child of the family born in/after 1988, and to the second child born in/after 1990. The rebate for the second child comprised a one-time non-refundable tax credit, which could be shared between the child's parents for set-off against their respective gross tax liabilities. The amount of the tax credit ranged from S$0 to S$20,000, depending on the mother's age at the time of delivery of the child. The rebates for the third child and for the fourth child consisted of two components. Each component also took the form of a one-time non-refundable tax credit. The first component was a lump sum S$20,000 tax credit, which could be shared between the child's parents. The second component amounted to 15% of the mother's earned income in the year of birth of the child, and this tax credit could be set off only against the mother's gross tax liabilities.

In most cases, the parent's/parents' gross tax liability/liabilities for the first year after the birth of the child would be insufficient to fully utilise the STR tax credit. In this regard, any balance of the tax credit remaining unutilised could be carried forward for set-off against the future tax liabilities of the eligible parent/s for up to the next eight years. In other words, the maximum period over which each eligible child's STR could be set off was nine years.

The pronatalist tax expenditures were structured so as to provide disproportionately higher tax subsidies to higher-income couples.[21] The structural features that contributed to this income-regressive subsidy effect were:

- the non-refundability and limited carry-forward features of the STR tax credits. This resulted in lower-income parents not being able to fully set off their statutory STR entitlements within the stipulated nine-year period;
- restriction of eligibility for ECR and the second component of STR to the child's mother, with ECR eligibility also dependent on the mother's educational qualification. These incentives therefore were enjoyed only by dual-earner couples, whose family incomes were, on the average, higher than those of single-earner couples;
- quantification of ECR and the second component of STR based on a fixed percentage of the mother's earned income. This caused the statutory amounts of these incentives to increase proportionately with the mother's earned income (although certain caps did apply for ECR at very high levels of earned income); and
- progressivity in the personal income tax rate structure. Since the applicable marginal tax rate increases with income, disproportionately higher tax savings accrued to higher-income parents than to lower-income parents from fixed-dollar tax deductions. The income-regressive subsidy effect caused by the progressive tax rate structure was even more pronounced for ECR given that the statutory amount of this deduction generally increased with earned income (see the preceding point).

[21] See Poh (2005) for the valuation of these tax subsidies expressed in their direct subsidy equivalents.

Significant reforms to the personal income tax system in the 1990s and early 2000s contributed to a further skew of the pronatalist tax subsidies in favour of the rich. In particular, the major structural tax reform of 1994, which saw the introduction of the Goods and Services Tax in place of significant cuts in income tax, resulted in some 70% of resident individuals dropping out of the scope of income taxation (IRAS, 1995). This meant that all low-income and some middle-income couples effectively were excluded from enjoying any of the pronatalist tax subsidies from the mid 1990s. Although the significant income tax cuts in the 1990s and 2000s also reduced the tax subsidies enjoyed by high-income and upper middle-income couples, the effect was relatively minimal for high-income couples while the effect for upper middle-income couples was mitigated by an amendment in 1994 that extended the maximum set-off period for the non-refundable tax credits from seven years to nine years.[22]

In summary, the use of tax expenditures to deliver fertility incentives appears to be an administratively and politically expedient way for the Singapore Government to implicitly pursue its policy of selective pronatalism. Other factors that facilitate this strategy include the political dominance and perceived credibility of the governing political party, the culture of top-down policy decision-making, and the absence of any form of tax expenditure reporting that might have highlighted the costs of the incentives. The introduction of the pronatalist tax expenditures in the 1980s was not met with the level of adverse public reaction and widespread resentment that had greeted the equally controversial Graduate Mother Priority Scheme mentioned earlier. This paper investigates whether public acquiescence of these tax incentives may be potentially explained by fiscal illusion.

METHODOLOGY

Survey Administration

The findings reported in this paper are based on the responses to certain questions that were included in a survey of 350 married individuals in Singapore. The main purpose of the survey was not to investigate fiscal misperceptions, but rather to study the extent to which respondents take into account the pronatalist tax incentives in their decisions to have children – the main findings, in this respect, are reported in Poh (2004). However, a number of questions had been included in the survey questionnaire to capture respondents' perceptions of the incentives and it is these responses that are of relevance to this paper.

In view of the main objective of the survey, only married couples where the wife was not older than 44 years of age (in the year 2000) were surveyed. It was decided that, between the two spouses, the person filling in the survey questionnaire should be the spouse who had completed the couple's most recent annual income tax return. This requirement was imposed because it was often not possible to survey both spouses, and therefore the requirement ensured that the responses were supplied by that spouse who had at least some level of awareness of the couple's income tax affairs and some level of knowledge of income tax matters in general. It also meant that couples were excluded from the survey in situations where only one of the spouses was involved in the completion of the couple's tax return and he/she was not available to participate in the survey.

[22] See Poh (2005) for a more elaborate discussion of the impact of the personal income tax reforms on the pronatalist tax subsidies enjoyed by couples on different incomes.

The survey was conducted in December 2001 through visits made to various randomly selected households living in public flats and private residential properties across the city-state. Respondents were asked to complete a five-page questionnaire available in either English or Mandarin. The survey administrators were on hand to render any clarifications/assistance required by the respondents.

Sample Profile

The socio-economic profile of the sample of 350 respondents who participated in the survey is presented in Table 1, together with the profile of the relevant population of married individuals in the year 2000.

TABLE 1: SOCIO-ECONOMIC PROFILES OF THE SAMPLE AND THE POPULATION OF MARRIED INDIVIDUALS (WHERE THE WIFE'S AGE DOES NOT EXCEED 44 YEARS)

	Sample			Population [1]	
	Number of respondents	%		%	
Gender					
- Female	127	36.3		50.0	
- Male	223	63.7		50.0	
	N = 350	100.0		100.0	[2]
Age					
- under 30	67	19.6		14.4	
- 30 to 39	199	58.4		49.2	
- 40 and above	75	22.0		36.5	
	N = 341	100.0		100.0	[2]
Ethnicity					
- Chinese	288	82.3		77.2	
- Malay	42	12.0		14.7	
- Indian	16	4.6		7.7	
- Others	4	1.1		0.4	
	N = 350	100.0		100.0	[3]
Highest educational qualification					
- Primary	11	3.1		29.4	
- Secondary	123	35.1		54.4	
- Tertiary	216	61.7		16.2	
	N = 350	100.0		100.0	[4]
Annual income (of those working) in the year 2000					
- S$24,000 and below	46	14.0		37.3	
- S$24,001 to S$60,000	201	61.1		45.3	
- S$60,001 and above	82	24.9		17.4	
	N = 329	100.0	[5]	100.0	[6]

Occupational status (of those working)					
- Professional/managerial	97	30.8		27.1	
- Technical	77	24.4		31.8	
- Clerical/sales/service	80	25.4		25.4	
- Others (including non-classifiable occupations)	61	19.4		15.6	
	N = 315	100.0	[7]	100.0	[8]
Number of children					
- 0	85	24.3		18.9	
- 1	83	23.7		22.9	
- 2	125	35.7		35.4	
- 3	45	12.9		17.7	
- 4	10	2.9		4.1	
- 5 or more	2	0.6		1.0	
	N = 350	100.0		100.0	[9]

[1] Population characteristics are derived from census data relating to the year 2000.

[2] Data is based on COP (2001c) Table 60, relating to married couples.

[3] Data is based on COP (2001c) Table 60, relating to married couples. Individuals in inter-ethnic marriages have been excluded. This is because the census data does not break down data on couples in inter-ethnic marriages by the ethnicity of the individual spouses. Since Malays are less likely than other races to be in inter-ethnic marriages, the actual proportion of married individuals (with the wife not exceeding 44 years of age) who are Malay is likely to be less than the reported 14.7%.

[4] Data is based on COP (2001a) Table 16, relating to married individuals of ages not exceeding 44.

[5] Data excludes 15 respondents who are homemakers. Furthermore, the sample data is based on annual income from all sources.

[6] Data is based on COP (2001b) Table 36, relating to income from work (i.e. business and employment only) of married individuals of all ages. Including married individuals of all ages overstates the proportion in the lowest income group because of the presence of the elderly who are more likely to possess only low-level skills (and therefore earn low incomes) or are more likely to be undertaking part-time work.

[7] Data excludes 15 respondents who are homemakers.

[8] Data is based on COP (2001b) Table 19, relating to married individuals of all ages.

[9] Data is based on COP (2001a) Table 25, relating to ever-married females (i.e. including divorcees and widows) of ages not exceeding 44.

The sample appears to over-represent males compared to females but this is essentially due to the fact that it is usually the husband (rather than the wife) who completes the couple's income tax return and who is therefore selected to participate in the survey. Those with tertiary education are over-represented although, to some extent, this was

intended by the researcher given the specialised and technical nature of the subject matter of the survey. Intuitively, those with low education (and incomes) are less likely to gain from the tax incentives, less aware of their existence and less knowledgeable of their effects. It therefore made sense to sample proportionately more of higher-educated (and higher-income) respondents since it is this group to whom the incentives are targeted and who will enjoy the largest proportion of the benefits. For this same reason, those in the lowest income group (annual incomes not exceeding S$24,000) are under-represented – in fact, since the major tax reform of 1994 (discussed earlier in Section 3), these individuals generally are not liable to pay any income tax and will almost certainly not benefit at all from the tax incentives. Finally, there is also a slight over-representation of married individuals who are younger, who have no children, and who are in white-collar occupations.

Survey Questions

The survey questionnaire incorporated a number of questions that sought to ascertain respondents' awareness, knowledge and perceptions of the STR and ECR tax incentives. Five of the questions elicit respondents' perceptions on various aspects pertaining to the cost and distributive effects of the incentives and these responses are of particular relevance to this paper. The five questions are reproduced below and are numbered Q1, Q2, Q3, Q4A and Q4B for ease of reference:

> Q1: "Tax incentives, such as STR and ECR, reduce the taxes paid by those benefiting from the incentives. Unlike a direct cash subsidy, the Government does not directly pay out any money to those benefiting from the tax incentives. Which statement below do you agree with?
>
> - Tax incentives, such as STR and ECR, are provided at a cost to taxpayers at large since the Government is spending (i.e. allocating and re-distributing) resources.
> - Tax incentives, such as STR and ECR, are provided without any cost to taxpayers at large since the Government is not spending (i.e. not allocating or re-distributing) any resources.
> - I don't know."
>
> Q2: "Malay couples form about 15% of all married couples of child-bearing age. Which statement below do you agree with?
>
> - Malay couples enjoy more than 15% of the total tax savings under the STR and ECR tax incentives because a Malay couple, on the average, has more children than a non-Malay couple.
> - Malay couples enjoy less than 15% of the total tax savings under the STR and ECR tax incentives even though a Malay couple, on the average, has more children than a non-Malay couple.
> - I don't know."
>
> Q3: "Which statement below do you agree with?
>
> - Generally, a higher-educated married individual enjoys more tax savings from the STR and ECR tax incentives than does a lower-educated individual with the same number of children and in the same circumstances.
> - Generally, a higher-educated married individual enjoys less tax savings from the STR and ECR tax incentives than does a lower-educated individual with the same number of children and in the same circumstances.
> - I don't know."

> Q4: "Assume that there are two married individuals, H and L. Both are allowed STR and/or ECR for the same number of children and are in exactly the same circumstances, except that H's annual income (say, $60,000) is two times L's annual income (say, $30,000).
>
> [A] Which statement below do you agree with?
>
> - H's tax savings from STR and/or ECR will be more than L's tax savings.
> - H's tax savings from STR and/or ECR will be less than L's tax savings.
> - I don't know.
>
> [B] Which statement below do you also agree with?
>
> - H's tax savings from STR and/or ECR will be more than two times L's tax savings.
> - H's tax savings from STR and/or ECR will be less than two times L's tax savings.
> - I don't know."

Responses to Q1 will reveal if there is misperception on the part of respondents in thinking that a tax expenditure is costless and, in that sense, not equivalent to a direct expenditure. Responses to Q2, Q3 and Q4 will reveal if respondents are able to perceive the distribution of the pronatalist tax subsidies as effectively biased against Malay couples but favouring higher-educated and higher-income couples. Q4A presents the distribution of the tax subsidies in absolute dollar terms whereas Q4B frames the distribution of the subsidies in terms of whether it is income-regressive or income-progressive.

Limitations

A couple of limitations to this study ought to be noted. These stem from the fact that the original objective of the survey was not to investigate fiscal misperceptions but rather to gain an insight into the extent to which the pronatalist tax incentives are taken into account in married couples' decisions to have children. The first limitation relates to the survey sample, which excludes, amongst others, all single persons even though findings relating to their awareness and perceptions of the tax expenditures are potentially of interest. Secondly, due to constraints imposed by the need to avoid an unduly long survey instrument, only a few questions could be devoted in the questionnaire to eliciting respondents' perceptions of the incentives. Responses were sought on five aspects or dimensions of interest (see Section 4.3 and Table 3). However, only one question covered each dimension examined. Therefore, given the absence of multiple questions to elicit responses on the same dimension, it was not possible to assess quantitatively the reliability of the responses provided.

Analysis and Statistical Methods

The analysis in the remainder of this paper proceeds as follows. Section 5.1 reports the extent to which respondents are aware of the existence of the pronatalist tax expenditures and examines whether such awareness is related to their socio-economic characteristics. Section 5.2 proceeds to examine whether, and to what extent, respondents are able to perceive each of the five aspects pertaining to the cost and distributive effects of the tax incentives. The analyses in Section 5.2 cover only those respondents who are aware of the existence of at least one of the two incentives. Respondents' ability to perceive each of the five aspects is also correlated to their socio-economic characteristics.

In examining the correlation between respondents' ability to perceive the cost/ distributive effects and their socio-economic characteristics, both bivariate and multivariate approaches are adopted. From a bivariate perspective, two measures of association, Cramer's V and Somer's d, are reported. Cramer's V is a symmetric measure of the strength of the association between two nominal variables. On the other hand, Somer's d provides a directional measure of the strength of the association between two ordinal variables, with respondents' ability to perceive as the dependent variable in the analysis. From a multivariate perspective, a logistic regression is run to regress the log odds of respondents' ability to perceive against various predictor variables that take into account respondents' socio-economic characteristics. The regression equations are arrived at using the backward stepwise method based on the Likelihood Ratio Test and significance levels of 5% and 10% respectively for entry and removal of variables.

Eight socio-economic variables are used as independent variables in the exploratory research:[23]

- GEN: Gender (female v male).
- AGE: Age (<30 v 30-39 v ≥40).
- ETH: Ethnicity (non-Malay v Malay).
- EDU: Education (non-tertiary-educated v tertiary-educated).
- Occupational-related variables, i.e.
  - OCC_PRO (technical, clerical, sales, service, and other non-professional/ managerial occupations v professional/managerial occupations).
  - OCC_FIN (non-finance related v finance-related, e.g. accountants, finance directors, personal financial consultants, tax officers, etc.).
- TRAIN: Tax training (based on a yes/no response to the following question: "Have you ever attended any courses, whether or not as part of your formal education, which have provided you with knowledge of personal income taxation in Singapore?" The purpose of this variable is to account for any specialised knowledge that the respondent may have pertaining to Singapore personal income taxation).
- INC: Income (based on the respondent's annual income in 2000, i.e. ≤S$24K v >S$24K-≤S$60K v >S$60K. Respondents in the lowest income category are not liable to pay any income tax and generally do not benefit at all from the pronatalist tax incentives).
- BEN: Respondent's status as a beneficiary or non-beneficiary of the STR incentive (comprises three categories as follows:
  - Non-beneficiaries, i.e. respondents with annual incomes not exceeding S$24,000 and/or those without any children qualifying for the STR incentive;

[23] Many of these variables are similar to those included in prior studies on fiscal knowledge and tax burden consciousness. For instance, gender and social class (defined in terms of various occupational categories) were among the background variables considered by Cullis and Lewis (1985) in evaluating the level of voter knowledge of the various sources of UK central government financing. Similarly, gender, age, education, income and occupational status were included in Schokkaert's (1988) analyses of voter knowledge and awareness of local government financing in Belgium. Gender, age and education were among the potential determinants considered by Fujii and Hawley (1988) in their study on marginal income tax rate consciousness in the US.

- Middle-income beneficiaries, i.e. respondents with annual incomes from S$24,001 to S$60,000 who have qualifying children; and
- High-income beneficiaries, i.e. respondents with annual incomes exceeding S$60,000 who have qualifying children. In view of the features of the STR incentive described in Section 3, high-income beneficiaries enjoy disproportionately more tax savings than middle-income beneficiaries with the same number of children. In particular, and unlike for middle-income beneficiaries, high-income beneficiaries are able to fully utilise their statutory STR tax credits over the nine-year set-off period).

FINDINGS

Awareness of the existence of the pronatalist tax expenditures

Out of the 350 respondents surveyed, 275 (78.6%) claimed to be aware of the STR incentive and 264 (75.4%) of the ECR incentive. 318 (90.9%) knew of at least one of the two incentives, with the remaining 32 (9.1%) having not heard of either incentive. Table 2 presents the association between awareness of at least one of the two tax expenditures and each of the socio-economic variables.

TABLE 2: AWARENESS OF AT LEAST ONE OF THE TWO PRONATALIST TAX EXPENDITURES BY VARIOUS SOCIO-ECONOMIC VARIABLES

		Cramer's V [1]		Somer's d [2]	
Awareness of tax incentives (No v Yes) **by the following socio-economic variables:**	N	Value	p-value	Value	p-value
Gender (Female v Male)	350	.054	.314	-.032	.291
Age (<30 v 30-39 v ≥40)	341	.075	.386	.030	.314
Ethnicity (Non-Malay v Malay)	350	.096	[3] .085	-.085	.158
Education (Non-Tertiary v Tertiary)	350	.138	.010	.082	.017
Tax training (Not trained v Trained)	350	.110	.040	.087	.001
Income (≤$24K v >$24K-$60K v >$60K)	344	.089	.259	.039	.186
Occupation (Other v Professional)	329	.066	.232	.104	.189
Occupation (Other v Finance-related)	329	.050	[3] .443	.040	.284

[1] Symmetric measure of nominal-by-nominal association.
[2] Directional measure of ordinal-by-ordinal association, with awareness of tax incentives as the dependent variable.
[3] Using Fisher's Exact Test (rather than Chi-square Test) due to one cell having an expected frequency of less than 5.

Based on Table 2, tertiary-educated respondents and those who have prior training in personal income taxation are more likely to be aware of at least one incentive as compared to respondents without such education and training. There is some evidence that non-Malays are more likely than Malays to be aware of at least one incentive although this result is not statistically significant at the 5% level. Other associations, including the association with income, are not statistically significant.

Perceptions of the cost and distributive outcomes of the pronatalist tax expenditures

For the remaining analyses in this paper, only the 318 respondents with awareness of at least one of the two pronatalist tax expenditures are included. The remaining 32 respondents without any knowledge of the existence of either incentive were excluded

because they could not logically be expected to provide any useful responses of their perceptions of the distributive effects of the tax expenditures.

General

Table 3 reports the numbers and percentages of respondents who are, and who are not, able to perceive the five different aspects relating to the cost and distributive outcomes of the pronatalist tax expenditures.

TABLE 3: ABILITY TO PERCEIVE THE COST AND DISTRIBUTIVE OUTCOMES OF THE PRONATALIST TAX EXPENDITURES

		Perceptive	Not perceptive	
Aspect in respect of which respondent's ability to perceive is examined	N	[1]	Deluded [2]	Unsure [3]
Spending implications and hidden cost of the tax expenditures (Q1)	317	87 (27.4%)	115 (36.3%)	115 (36.3%)
			230 (72.6%)	
Benefits enjoyed disproportionately less by Malay than non-Malay couples (Q2)	318	55 (17.3%)	115 (36.2%)	148 (46.5%)
			263 (82.7%)	
Benefits enjoyed more by higher-educated than lower-educated couples (Q3)	318	120 (37.7%)	97 (30.5%)	101 (31.8%)
			198 (62.3%)	
In absolute dollars, more benefits accrue to higher-income than lower-income couples (Q4A)	317	126 (39.7%)	18 (5.7%)	173 (54.6%)
			191 (60.3%)	
As a percentage of income, more benefits accrue to higher-income than lower-income couples (Q4B)	317	56 (17.7%)	61 (19.2%)	200 (63.1%)
			261 (82.3%)	

[1] 'Perceptive' refers to a correct response to the relevant question in Section 4.3 (e.g. for Q1, agreeing with the statement that tax incentives are provided at a cost to taxpayers), thereby suggesting that the respondent was able to perceive the aspect examined (i.e. the spending implications and hidden cost of the tax expenditures).
[2] 'Deluded' refers to an incorrect response (e.g. for Q1, agreeing with the statement that tax incentives are provided without any cost to taxpayers).
[3] 'Unsure' refers to a 'don't know' response.

There appears to be widespread misperceptions (or, at the very least, ignorance) of the cost and distributive outcomes associated with the pronatalist tax expenditures. Fewer than three in ten respondents could appreciate the spending implications of the tax expenditures and the hidden (opportunity) cost of such spending. The fact that higher-income couples enjoy more tax savings in absolute dollars than their lower-income counterparts with the same number of children and in the same circumstances (a seemingly obvious point) is evident to only four in ten respondents. When asked if the

distribution of the subsidies is income-progressive or income-regressive, only 18% of the respondents knew that it is income-regressive. A higher percentage of the respondents (38%) were able to perceive the elitist slant of the tax expenditures favouring higher-educated couples. There are two plausible reasons for this relatively higher level of consciousness. Firstly, educational qualification was an explicit qualifying condition for the ECR incentive and the prescribed minimum qualification was clearly stated in Inland Revenue literature referred to by taxpayers when completing their annual income tax returns. Secondly, the very intense and, to some extent, acrimonious public debate that followed the announcement of the controversial pronatalist measures in 1984 had very much focussed public attention on the fertility imbalance between the higher and lower educated, and had highlighted the eugenic bias of the incentives. The distributional aspect least perceived is the implicit bias of the tax expenditures against Malay couples. Only 17% of respondents were perceptive of this ethnic bias, and more than double this number (i.e. 36%) were in fact deluded into thinking that Malay couples enjoy benefits commensurate with the number of children they have. The relatively low perceptibility rate is unsurprising given that the ability to perceive this aspect required respondents not only to be aware that the incentives do not favour the lower educated and the lower income, but also to be cognisant of the fact that the lower educated and lower income are disproportionately Malay.

It may also be observed that issues relating to the distribution of the pronatalist tax subsidies by income had the highest percentages of 'don't know' responses. 63% of respondents stated that they did not know whether the benefits of the tax expenditures are distributed in an income-progressive or income-regressive manner while, somewhat surprisingly, as many as 55% of respondents stated that they did not know whether higher-income couples enjoy more or less dollar savings than lower-income couples in the same circumstances.

In the remaining analyses that follow, responses relating to each aspect will be classified into two categories – 'perceptive' and 'not perceptive', with the latter category incorporating the 'deluded' and 'don't know' responses.

Perceptibility of the spending implications and hidden cost

Table 4 reports the bivariate association between respondents' ability to perceive the spending implications and hidden cost of the pronatalist tax expenditures and each of the socio-economic variables.

TABLE 4: ABILITY TO PERCEIVE THE SPENDING IMPLICATIONS AND HIDDEN COST OF THE PRONATALIST TAX EXPENDITURES BY VARIOUS SOCIO-ECONOMIC VARIABLES

		Cramer's V [1]		Somer's d [2]	
Ability to perceive (No v Yes) **by the following socio-economic variables:**	N	Value	p-value	Value	p-value
Gender (Female v Male)	317	.108	.055	.100	.046
Age (<30 v 30-39 v ≥40) [3]	309	.152	.029	.007	.857
Ethnicity (Non-Malay v Malay)	317	.104	.064	-.148	.030
Education (Non-Tertiary v Tertiary)	317	.273	<.0005	.253	<.0005
Tax training (Not trained v Trained)	317	.179	.001	.214	.005
Income (≤$24K v >$24K-$60K v >$60K)	311	.262	<.0005	.197	<.0005
Beneficiary status (Non-ben v MI ben v HI ben) [4]	312	.174	.009	.063	.239
Occupation (Other v Professional)	299	.233	<.0005	.228	<.0005
Occupation (Other v Finance-related)	299	.166	.004	.201	.011

[1] Symmetric measure of nominal-by-nominal association.
[2] Directional measure of ordinal-by-ordinal association, with ability to perceive as the dependent variable.
[3] There is no statistically significant difference in ability to perceive between respondents in age groups <30 and ≥40. However, respondents in age group 30-39 are more perceptive than those in the other age groups. The 2x2 classification (Other v 30-39) yields the following statistics: N = 309; V = .150 (p = .008); d = .135 (p = .006).
[4] There is no statistically significant difference in ability to perceive between non-beneficiaries and middle-income beneficiaries. However, high-income beneficiaries are more perceptive than non-beneficiaries or middle-income beneficiaries. The 2x2 classification (Other v HI ben) yields the following statistics: N = 313; V = .171 (p = .003); d = .270 (p = .013).

The results suggest that education, tax training, income and occupational status have a bearing on whether the spending implications and hidden (opportunity) cost of the pronatalist tax expenditures are perceived. There is also evidence to suggest a higher level of perceptiveness in this respect amongst males (compared to females), amongst respondents between the ages of 30 and 39 (compared to respondents of other ages), and amongst non-Malays (compared to Malays). However, based on results of the multivariate analysis reported below, these variables are no longer statistically significant once education, tax training, income and occupational status are controlled.

With regards to beneficiary status, the bivariate analysis suggests that high-income beneficiaries are more likely to perceive the spending and cost implications of the tax expenditures than other respondents (Note [4] in Table 4). However, when compared to non-beneficiaries on the same incomes (i.e. controlling for income), high-income beneficiaries are not significantly more perceptive (Table 5). In other words, while a high-income respondent is certainly more perceptive than a lower-income respondent due probably to a greater incentive and the means to be fiscally knowledgeable and/or due to better financial acumen, the fact that the high-income respondent is also a beneficiary of a pronatalist tax incentive does not, in itself, make him/her any more cognisant of the spending and cost implications of the tax expenditures. One does not need to be a beneficiary of a specific tax expenditure program in order to appreciate the spending implications and opportunity cost to taxpayers that characterise tax expenditure spending in general.

TABLE 5: ABILITY TO PERCEIVE THE SPENDING IMPLICATIONS AND HIDDEN COST OF THE PRONATALIST TAX EXPENDITURES AMONGST HIGH-INCOME RESPONDENTS (INCOMES EXCEEDING S$60,000) BY BENEFICIARY STATUS

	Non-beneficiary No. (%) of high-income respondents	Beneficiary No. (%) of high-income respondents	Total No. (%) of high-income respondents
Not perceptive	26 (55.3%)	13 (48.1%)	39 (52.7%)
Perceptive	21 (44.7%)	14 (51.9%)	35 (47.3%)
	47 (100.0%)	27 (100.0%)	74 (100.0%)

Minimum expected cell frequency: 12.77
Cramer's V = .069 (p = .552)
Somer's d (Ability to perceive as the dependent variable) = .072 (p = .552)

To ascertain the relative importance of the various socio-economic variables in determining respondents' ability to perceive the spending implications and hidden cost, a logistic regression was run, with the dependent variable being the log odds of being able to perceive, and the independent variables comprising the various socio-economic variables. The basis of arriving at the regression equation is as described in section 4.5 and the results are summarised in Table 6.[24]

[24] Collinearity is not a major problem in the final equation. The strongest correlation between any pair of predictor variables is that between LOW_INC and MID_INC (R=.389).

TABLE 6: LOGISTIC REGRESSION – ABILITY TO PERCEIVE THE SPENDING IMPLICATIONS AND HIDDEN COST OF THE PRONATALIST TAX EXPENDITURES

N = 288 Nagelkerke R^2 = .218

Likelihood Ratio Test for Overall Model:
-2LL for final model = 141.395 Chi-square = 46.605 df = 5 p-value = <.0005

Hosmer and Lemeshow Test for Goodness-of-Fit:
Chi-square = 9.369 df = 6 p-value = .154

Variables in the Equation:

	Parameter estimate	Std error	Wald	df	p-value	Odds ratio
EDU [1]	1.016	.381	7.120	1	.008	2.762
TRAIN [2]	.892	.351	6.454	1	.011	2.440
OCC_PRO [3]	.711	.301	5.563	1	.018	2.036
Income			9.514	2	.009	
- LOW_INC [4]	-1.536	.573	7.175	1	.007	.215
- MID_INC [5]	-.788	.322	6.001	1	.014	.455
INTERCEPT	-1.539	.434	12.576	1	<.0005	.215

Likelihood Ratio Tests for Individual Variables:

	-2LL of reduced model	Chi-square	df	p-value
INTERCEPT	141.395	.000	0	
EDU	149.239	7.844	1	.005
TRAIN	147.736	6.341	1	.012
OCC_PRO	146.907	5.512	1	.019
Income (LOW_INC and MID_INC)	151.345	9.950	2	.007

[1] EDU (0 = Non-tertiary-educated, 1= Tertiary-educated)
[2] TRAIN (0 = Not tax trained, 1 = Tax trained)
[3] OCC_PRO (0 = Other occupation, 1 = Professional/managerial occupation)
[4] LOW_INC (0 = Other income levels, 1 = Income not exceeding S$24,000)
[5] MID_INC (0 = Other income levels, 1 = Income exceeding S$24,000 but not exceeding S$60,000)

The results indicate that income is one of the most important variables determining respondents' ability to perceive the spending implications and hidden cost of the tax expenditures – in particular, the odds of a low-income respondent being able to perceive are a factor of only .215 of the odds for a high-income respondent, or put the other way, the high-income respondent's odds are a factor of 4.646 of the low-income respondent's odds. General education, special tax training and occupational status are the other significant determinants, whereas gender, age, ethnicity and beneficiary status are statistically insignificant when the four variables mentioned previously are controlled.

Perceptibility of the ethnic bias

All bivariate associations between respondents' ability to perceive the bias of the tax expenditures against Malay couples and the various socio-economic variables (except for beneficiary status) are weak and statistically insignificant. One conclusion therefore is that Malays are not significantly more, or less, likely than non-Malays to perceive that the incentives are effectively biased against them.[25]

The data (Table 7), however, provides some statistical support for the contention that beneficiaries are more perceptive than non-beneficiaries of the hidden ethnic bias of the tax incentives (although this association is a relatively weak one).

TABLE 7: ABILITY TO PERCEIVE THE ETHNIC BIAS OF THE PRONATALIST TAX EXPENDITURES BY BENEFICIARY STATUS

	Non-beneficiary No. (%) of respondents	Beneficiary No. (%) of respondents	Total No. (%) of respondents
Not perceptive	182 (85.4%)	76 (76.0%)	258 (82.4%)
Perceptive	31 (14.6%)	24 (24.0%)	55 (17.6%)
	213 (100.0%)	100 (100.0%)	313 (100.0%)

Minimum expected cell frequency: 17.57
Cramer's V = .116 (p = .041)
Somer's d (Ability to perceive as the dependent variable) = .094 (p = .055)

Perceptibility of the eugenic bias

Table 8 presents the bivariate association between respondents' ability to perceive the eugenic nature of the pronatalist tax expenditures and each of the socio-economic variables. An additional variable, 'completion of married woman's tax return', has been included to take into account whether the respondent had any part in completing that section of the couple's tax return that relates to the wife. Since only the wife could be eligible for the ECR incentive and the ECR incentive had an explicit eligibility condition that related to educational qualifications, completing the married woman's tax return potentially exposes the respondent to this information and raises his/her consciousness of the eugenic bias of the incentive.

[25] The relevant statistics for the bivariate association between ability to perceive the ethnic bias and ethnicity are as follows: N = 318; Cramer's V = .052 (p = .356); Somer's d (ability to perceive as the dependent variable) = .062 (p = .404).

TABLE 8: ABILITY TO PERCEIVE THE EUGENIC BIAS OF THE PRONATALIST TAX EXPENDITURES BY VARIOUS SOCIO-ECONOMIC VARIABLES

		Cramer's V [1]		Somer's d [2]	
Ability to perceive (No v Yes) **by the following socio-economic variables:**	N	Value	p-value	Value	p-value
Gender (Female v Male)	318	.033	.554	-.033	.555
Age (<30 v 30-39 v ≥40) [3]	310	.187	.004	.136	.007
Ethnicity (Non-Malay v Malay)	318	.037	.508	.058	.517
Education (Non-Tertiary v Tertiary)	318	.008	.884	-.008	.885
Tax training (Not trained v Trained)	318	.218	<.0005	.282	<.0005
Income (≤$24K v >$24K-$60K v >$60K)	312	.077	.400	-.057	.241
Beneficiary status (Non-ben v MI ben v HI ben)	313	.069	.475	.007	.903
Occupation (Other v Professional)	299	.054	.350	.057	.354
Occupation (Other v Finance-related)	299	.158	.006	.207	.010
Completion of married woman's tax return (No v Yes)	316	.151	.007	.148	.006

[1] Symmetric measure of nominal-by-nominal association.
[2] Directional measure of ordinal-by-ordinal association, with ability to perceive as the dependent variable.
[3] There is no statistically significant difference in ability to perceive between respondents in age groups <30 and 30-39. However, respondents in age group ≥40 are more perceptive than those in the other age groups. The 2x2 classification (Other v ≥40) yields the following statistics: N = 310; V = .187 (p = .001); d = .219 (p = .002).

Based on the bivariate analyses, the variables with statistical significance at the 5% level are age (Other v ≥40), tax training, occupation (other v finance-related) and completion of married woman's tax return. Gender, ethnicity, education, income, beneficiary status and occupational status (other v professional) do not determine respondents' ability to perceive the eugenic bias of the tax incentives. Age, tax training and completion of married woman's tax return are also confirmed statistically significant from a multivariate perspective. Table 9 reports the results of the relevant regression.

TABLE 9: LOGISTIC REGRESSION – ABILITY TO PERCEIVE THE EUGENIC BIAS

N = 291 Nagelkerke R^2 = .128

Likelihood Ratio Test for Overall Model:
-2LL for final model = 47.728 Chi-square = 28.847 df = 4 p-value = <.0005

Hosmer and Lemeshow Test for Goodness-of-Fit:
Chi-square = 1.743 df = 4 p-value = .783

Variables in the Equation:

	Parameter estimate	Std error	Wald	df	p-value	Odds ratio
AGE_40 [1]	.885	.301	8.652	1	.003	2.424
TRAIN [2]	.926	.350	6.975	1	.008	2.523
OCC_FIN [3]	.617	.362	2.904	1	.088	1.852
WRET [4]	.529	.261	4.115	1	.042	1.697
INTERCEPT	-1.273	.228	31.178	1	<.0005	.280

Likelihood Ratio Tests for Individual Variables:

	-2LL of reduced model	Chi-square	df	p-value
INTERCEPT	47.728	.000	0	
AGE_40	56.435	8.707	1	.003
TRAIN	54.785	7.057	1	.008
OCC_FIN	50.609	2.881	1	.090
WRET	51.899	4.171	1	.041

[1] AGE_40 (0 = Other age group, 1 = Age group ≥40)
[2] TRAIN (0 = Not tax trained, 1 = Tax trained)
[3] OCC_FIN (0 = Other occupation, 1 = Finance-related occupation)
[4] WRET (0 = Did not complete married woman's tax return, 1 = Completed married woman's tax return)

The finding that respondents aged 40 years or older are more perceptive (than younger respondents) of the eugenic bias of the tax expenditures is robust even after controlling for the other variables. There may well be a very simple reason for this. It has to be remembered that these older respondents would have been in their mid twenties to mid thirties[26] at the time when the controversial tax and other incentives were first introduced in the 1980s. They would have experienced and, perhaps, even participated in the intense public debate that occurred at that time. This debate had evolved mainly around the issues of eugenics and elitism. Some had disputed outright the validity of the hypothesis that intelligence and talent are primarily inherited, while many others felt strongly that, regardless of any truth in the hypothesis, it was beyond the legitimacy of government action anyway to pursue a eugenic population policy and to institutionalise a system of incentives and disincentives that breeds elitism and promotes class-consciousness. The extensive media coverage and widespread

[26] Respondents aged 40 in 2001 would have been 23 years old in 1984. The oldest respondents in the sample of 318 were 51 years old in 2001, i.e. 34 years old in 1984.

publicity given to the heated exchanges in the 1980s appear, more than fifteen years on, to have left an imprint on older respondents of the present survey. Respondents old enough to recall the controversies and acrimony of the mid 1980s are found to be more likely to perceive the eugenic bias of the incentives. Younger respondents to the survey would have been too young back then to appreciate or remember the controversy.

Perceptibility of the bias in favour of the rich

Tables 10 and 11 report respectively the bivariate associations and the logistic regression relating to respondents' ability to perceive that higher-income couples enjoy more dollar subsidies from the pronatalist tax expenditures than do lower-income couples in the same circumstances.

TABLE 10: ABILITY TO PERCEIVE WHETHER HIGHER-INCOME COUPLES ENJOY MORE TAX SUBSIDIES IN ABSOLUTE DOLLARS BY VARIOUS SOCIO-ECONOMIC VARIABLES

		Cramer's V [1]		**Somer's d [2]**	
Ability to perceive (No v Yes)	N	Value	p-value	Value	p-value
by the following socio-economic variables:					
Gender (Female v Male)	317	.012	.830	.012	.830
Age (<30 v 30-39 v ≥40)	309	.042	.761	.037	.459
Ethnicity (Non-Malay v Malay)	317	.105	.062	.163	.075
Education (Non-Tertiary v Tertiary)	317	.098	.080	.100	.075
Tax training (Not trained v Trained)	317	.258	<.0005	.338	<.0005
Income (≤$24K v >$24K-$60K v >$60K)	311	.071	.455	-.012	.814
Beneficiary status (Non-ben v MI ben v HI ben)	312	.122	.099	.113	.044
Occupation (Other v Professional)	298	.090	.121	.096	.125
Occupation (Other v Finance-related)	298	.223	<.0005	.296	<.0005

[1] Symmetric measure of nominal-by-nominal association.
[2] Directional measure of ordinal-by-ordinal association, with ability to perceive as the dependent variable.

TABLE 11: LOGISTIC REGRESSION – ABILITY TO PERCEIVE THAT HIGHER-INCOME COUPLES ENJOY MORE TAX SUBSIDIES IN ABSOLUTE DOLLARS

N = 293 Nagelkerke R^2 = .142

Likelihood Ratio Test for Overall Model:
-2LL for final model = 75.292 Chi-square = 32.640 df = 5 p-value = <.0005

Hosmer and Lemeshow Test for Goodness-of-Fit:
Chi-square = 2.563 df = 4 p-value = .633

Variables in the Equation:

	Parameter estimate	Std error	Wald	df	p-value	Odds ratio
ETH [1]	.720	.391	3.386	1	.066	2.055
TRAIN [2]	.989	.358	7.644	1	.006	2.688
Beneficiary status			5.167	2	.075	
- MID_BEN [3]	.453	.305	2.204	1	.138	1.573
- HI_BEN [4]	.860	.436	3.897	1	.048	2.364
OCC_FIN [5]	1.022	.365	7.856	1	.005	2.779
INTERCEPT	-1.007	.182	30.698	1	<.0005	.365

Likelihood Ratio Tests for Individual Variables:

	-2LL of reduced model	Chi-square	df	p-value
INTERCEPT	75.292	.000	0	
ETH	78.680	3.387	1	.066
TRAIN	83.081	7.789	1	.005
Beneficiary status (MID_BEN and HI_BEN)	80.491	5.198	2	.074
OCC_FIN	83.255	7.963	1	.005

[1] ETH (0 = Non-Malay, 1 = Malay)
[2] TRAIN (0 = Not tax trained, 1 = Tax trained)
[3] MID_BEN (0 = Other respondent, 1 = Beneficiary with income exceeding S$24,000 but not exceeding S$60,000)
[4] HI_BEN (0 = Other respondent, 1 = Beneficiary with income exceeding S$60,000)
[5] OCC_FIN (0 = Other occupation, 1 = Finance-related occupation)

Tables 12 and 13 report respectively the bivariate associations and the logistic regression relating to respondents' ability to perceive that higher-income couples enjoy more tax subsidies as a percentage of income than do lower-income couples in the same circumstances.

TABLE 12: ABILITY TO PERCEIVE WHETHER HIGHER-INCOME COUPLES ENJOY MORE TAX SUBSIDIES AS A PERCENTAGE OF INCOME (I.E. THE INCOME-REGRESSIVE BENEFIT DISTRIBUTION) BY VARIOUS SOCIO-ECONOMIC VARIABLES

		Cramer's V [1]		Somer's d [2]	
Ability to perceive (No v Yes) **by the following socio-economic variables:**	N	Value	p-value	Value	p-value
Gender (Female v Male)	317	.003	.962	-.002	.962
Age (<30 v 30-39 v ≥40)	309	.034	.833	.003	.947
Ethnicity (Non-Malay v Malay)	317	.022	.701	.026	.713
Education (Non-Tertiary v Tertiary)	317	.020	.727	.016	.724
Tax training (Not trained v Trained)	317	.103	.067	.105	.109
Income (≤$24K v >$24K-$60K v >$60K) [3]	311	.193	.003	-.052	.249
Beneficiary status (Other v HI ben) [4]	313	.127	[5] .034	.172	.077
Occupation (Other v Professional)	298	.028	.627	-.024	.619
Occupation (Other v Finance-related)	298	.050	.390	.052	.422

[1] Symmetric measure of nominal-by-nominal association.
[2] Directional measure of ordinal-by-ordinal association, with ability to perceive as the dependent variable.
[3] Respondents with incomes up to $24,000 are more perceptive than those in higher income groups. The 2x2 classification (≤$24K v Other) yields the following statistics: N = 311; V = .176 (p = .002); d = -.180 (p = .011).
[4] There is no statistically significant difference in ability to perceive between non-beneficiaries and middle-income beneficiaries. These two groups are collapsed into one labelled 'Other' in order to obtain a 2x2 classification to which Fisher's Exact Test is applied.
[5] Using Fisher's Exact Test (rather than Chi-square Test) due to one cell having an expected frequency of less than 5.

TABLE 13: LOGISTIC REGRESSION – ABILITY TO PERCEIVE THE INCOME-REGRESSIVE BENEFIT DISTRIBUTION

N = 309 Nagelkerke R^2 = .083

Likelihood Ratio Test for Overall Model:
-2LL for final model = 23.494 Chi-square = 15.880 df = 2 p-value = <.0005

Hosmer and Lemeshow Test for Goodness-of-Fit:
Chi-square = .015 df = 1 p-value = .902

Variables in the Equation:

	Parameter estimate	Std error	Wald	df	p-value	Odds ratio
LOW_INC [1]	1.254	.358	12.278	1	<.0005	3.504
HI_BEN [2]	1.283	.455	7.938	1	.005	3.607
INTERCEPT	-1.976	.202	96.025	1	<.0005	.139

Likelihood Ratio Tests for Individual Variables:

	-2LL of reduced model	Chi-square	df	p-value
INTERCEPT	23.494	.000	0	
LOW_INC	34.971	11.477	1	.001
HI_BEN	30.571	7.076	1	.008

[1] LOW_INC (0 = Other income levels, 1 = Income not exceeding S$24,000)
[2] HI_BEN (0 = Other respondent, 1 = Beneficiary with income exceeding S$60,000)

The main findings from Tables 10 to 13 may be summarised as follows. Firstly, TRAIN and OCC_FIN are important determinants of whether a respondent can perceive the absolute dollar distribution of the tax subsidies (Tables 10 and 11). However, neither variable is statistically significant as a determinant of the ability to perceive the income-disproportionate distribution of the tax subsidies (Tables 12 and 13). It does appear that many people do not think in income-proportionate terms when evaluating the distribution of tax subsidies, and that this is the case even for those trained in personal income taxation and/or whose work involve dealing with finance-related matters (including taxation). Secondly, there is some evidence (at the 10% significance level) that Malays are more perceptive (than non-Malays) of the absolute dollar distribution of the tax subsidies, but they are not any more perceptive of the income-disproportionate distribution of those subsidies.

Thirdly, there is no statistically significant difference between lower-income respondents and higher-income respondents with regards to their abilities to perceive the absolute dollar distribution of the tax subsidies (Table 10). However, low-income respondents (incomes up to S$24,000) are more perceptive (than higher-income respondents in general) of the income-regressive distribution of the tax subsidies (Note [3] in Table 12; and Table 13). This may seem somewhat surprising but there is a credible reason for it. Respondents with incomes up to S$24,000 do not pay any income tax as a result of the major tax reforms in the 1990s (described in Section 3). Regardless of the number of children they have, these respondents cannot possibly

enjoy any benefit from the pronatalist tax expenditures. Neither do they stand to gain from any other tax expenditure. By reflecting on their own obvious position (i.e. that they clearly receive no benefits through the tax system), some of these respondents are then probably able to reason that it is conceivable for the rich to enjoy multiples of the little or no tax savings that accrue to the poor. In other words, by being so obviously deprived outright of all benefits delivered through the tax system, some of these respondents probably have developed over the years a heightened consciousness of the disproportionate bias of tax incentives in general towards the rich. In contrast, higher-income respondents (incomes exceeding S$24,000) generally are liable to pay income tax and are not automatically excluded from enjoying tax savings from the pronatalist or other tax incentives. Unlike the low-income respondents, higher-income respondents lack an obvious personal reference point that could have helped them perceive the regressive benefit distribution.

While the argument referred to above of a heightened level of consciousness amongst low-income respondents may have some truth today, it is unlikely that this was the case amongst low-income taxpayers back in the 1980s when the pronatalist incentives were being introduced. When these incentives were first introduced in the 1980s (i.e. before the tax reforms of the 1990s), virtually all working individuals in Singapore were paying income taxes and therefore very few of those targeted by tax expenditures back then would have been denied outright of at least some tax savings due to low incomes. In this regard, it is doubtful that all that many low-income taxpayers were perceptive of the income-regressive bias at the time when it mattered most during the 1980s when the incentives were announced and being debated.

A fourth and final point is that amongst high-income respondents (incomes exceeding S$60,000), the evidence suggests that the ability to perceive the absolute dollar distribution (Table 11) and the income-regressive distribution (Tables 12 and 13) of the tax subsidies is statistically significantly greater for those who are beneficiaries of the incentives. To sum up this and the previous points, respondents who are more likely to perceive the income-regressive benefit distribution fall into one of two very distinct groups: (1) low-income respondents who, by the design of the tax incentives and the subsequent structural tax reforms, are now excluded from enjoying any benefit; and (2) high-income beneficiaries who stand to gain the most from the incentives (Table 14 summarises the position).

TABLE 14: ABILITY TO PERCEIVE THE INCOME-REGRESSIVE BENEFIT DISTRIBUTION BY INCOME AND BY BENEFICIARY STATUS (FOR RESPONDENTS WITH INCOMES EXCEEDING S$60,000)

Income	≤$24K	>$24K to $60K	>$60K		Total
			Non-beneficiary	**Beneficiary**	
	No. (%) of respondents	No. (%) of respondents	No. (%) of respondents	No. (%) of respondents	No. (%) of respondents
Not perceptive	35 (68.6%)	159 (87.4%)	*42 (89.4%)*	*18 (66.7%)*	254 (82.7%)
			60 (81.1%)		
Perceptive	16 (31.4%)	23 (12.6%)	*5 (10.6%)*	*9 (33.3%)*	53 (17.3%)
			14 (18.9%)		
	51 (100.0%)	182 (100.0%)	*47 (100.0%)*	*27 (100.0%)*	307 (100.0%)
			74 (100.0%)		

CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

This paper has presented the results of an exploratory study into the extent and determinants of the awareness of and perceptions pertaining to pronatalist tax policy in Singapore. While there appears to be a high level of awareness of the existence of the tax expenditures, there is widespread ignorance, if not misperceptions, of the cost and distributive outcomes of these incentives. This is so despite the over-representation in the sample of respondents who are tertiary-educated, on higher incomes and in professional/managerial occupations. Few respondents recognise the spending implications of the tax expenditures and that granting these incentives imposes a hidden cost on the majority of taxpayers who do not benefit from them. Similarly, not many respondents can perceive the predisposition of the incentives in favour of the highly educated and the rich, or the hidden bias against the Malays. This is especially true of the bias against the Malays, which is the least perceived of the three distributive biases and in respect of which the Malays themselves do not seem to be any more perceptive than respondents of other races. The overall findings of extensive ignorance and misperceptions may well be the key to explaining public acquiescence of the tax incentives and the relative lack of protest against their introduction in the 1980s when compared to the acrimonious reception given to the other, non-tax and more visibly elitist measures.

This study has not investigated directly the extent to which beneficiaries of tax expenditures are accurate in their assessments of the benefits they receive, or the extent to which non-beneficiaries misperceive the benefits received by beneficiaries. This therefore could be an opportunity for future research. However, the evidence from the present study is that beneficiaries (particularly, high-income beneficiaries who stand to gain the most) are more perceptive than non-beneficiaries of the overall distribution of the tax subsidies by income levels and, to some extent, of even the ethnic bias of the incentives. Beneficiaries are more likely to understand the distributive outcomes of the incentives than non-beneficiaries; moreover, non-beneficiaries, quite obviously, are less likely to be even aware of the existence of the

incentives. These findings highlight the potential of tax expenditures as a politically useful covert spending instrument to target and deliver benefits to a select few while ensuring that the underlying distributive effects remain relatively imperceptible to the majority.

The findings in this study also appear to illustrate the importance of public debates and media publicity in shaping public opinion on fiscal matters. The highly visible and widely reported controversies and criticisms in the 1980s of the eugenic and elitist slant of the overall pronatalist policy left a sustained impression on many of those who had experienced the episode. While the debates in the 1980s had raged on the eugenic aspects of the overall policy, with public resentment directed particularly at the primary school registration priority scheme for children of graduate mothers, specific references and objections to the income-regressive bias of the tax expenditures (which were an integral part of the overall package of policy measures introduced in the 1980s) were relatively muted. Insofar as public opinion on the distribution of tax subsidies is concerned, it is certainly the case that the overwhelming majority of people think in terms of absolute dollar savings rather than from the fiscal economists' perspective of income progressivity or regressivity. Not surprisingly then, the survey findings reveal more than double the proportion of respondents being perceptive of the absolute dollar distribution of the tax subsidies than of the distribution of the tax subsidies relative to income.

To sum up, this paper has provided empirical evidence of extensive ignorance and misperceptions associated with the cost and distributive outcomes of the pronatalist tax expenditures in Singapore. The findings are a testimony to why the tax expenditure route has proven to be a politically expedient way for the Singapore Government to implicitly pursue its policy of selective pronatalism. There is potential for more elaborate research to be undertaken in the future to investigate how such ignorance and misperceptions directly affect attitudes, preferences and support for these incentives. There is also scope for future studies, possibly experimental-based, to investigate directly whether and, if so, how benefits delivered through a tax expenditure are perceived any differently from the same benefits delivered through an equivalent direct subsidy.

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