



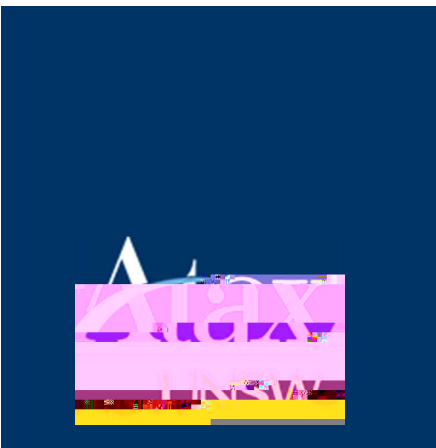
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Editorial note

From its inception, the Journal has received tremendous support from an array of eminent multidisciplinary tax scholars and practitioners from around the world. Many of them have agreed to join the Editorial Board of the Journal. Over the years, the Editorial Board has gradually expanded to reflect the changing nature of the tax discipline. Last year, many new appointments were made to diversify and rejuvenate

Over the period 1990-2015 remarkable economic achievements were recorded in Asia – despite the Asian Financial Crisis and the Global Financial Crisis roding their regional economies – as the region grew at 6% per year (see Jain Chandra et al., 2016). The poverty rate declined from 55% in 1990 to about 20% in 2015 (Jain Chandra et al., 2016). Against this backdrop of economic successes, the Asian economies also witnessed rising income inequalities since 1990 growth in the average Gini coefficient has been higher in Asia than for the rest of the world (see Zhuang Karbur & Maligalic, 2014, pp. 32 and 34, Figure 28). Further increases in income inequalities over this period impacted Asian inequalities as the population weighted Gini for Asia rose from 39 to 46 (see Zhuang Karbur & Maligalic, 2014, p. 33). The populous countries of ASEAN, along with China and India, have experienced continuing increases in income inequalities in the region, which motivates us to examine the precise impact of inequalities on taxes for the populous nations of ASEAN, China and India (collectively called the ACI economies).

With the unprecedented GDP growth, ACI economies experienced significant technological changes, increases in labour force participation by low skilled workers, declining top marginal income tax rates, widening inter-regional inequality within their economies and pressures from globalisation and liberalisation of regional factors and product markets. These changes are held responsible for growing inequality (see IMF, 2014). The impacts of inequality on other economic outcomes have been extensively studied in the extant literature.¹ In this article, we seek to establish whether income Gini can drive fiscal (tax) outcomes. Our primary motivation behind this work is predicated upon the possibility that inequality can significantly influence the political outcomes and thereby, fiscal outcomes in a society. It is an accepted tenet of public finance that governments exist for the provision of public goods in addition to fighting adverse consequences of missing markets, imperfect

endogenous and positively responds to the rising per capita income of a country (Peacock & Scott, 2000). In other words, economic growth paved the way for 'cultural and economic progress' such that the public demands larger state activities in lieu of private economic activities (Peacock & Wiseman, 1961, p. 16). Our main goal in this article is to investigate the effect of inequalities on taxes.

Despite a relative scarcity of studies on the impacts of inequalities on taxes, in an interesting recent work, Islam et al. (2018) utilise the panel models to examine the effects of inequalities on income tax: GDP ratios for 21 OECD countries over the period 1970-2011. Since taxes have been used by policy makers to reduce inequalities (Islam et al., 2018), the reverse causality running from taxes to inequalities can create estimation problems for any model examining the impact of inequality on taxes. This is an important element missing from the work of Islam et al. (2018). In this article, we entertain the possibility of mutual causality, or interdependency, between inequalities

trust in public institutions, eventually lowering tax efforts.² Similarly, treating income inequality as a factor explaining tax inefficiency in a Stochastic Tax Frontier Model,

Our methodology is based on a positivist research framework and a quantitative method utilising secondary data. More specifically, we postulate a simple model that taxes are determined by inequalities as applied by Islam et al. (2018) and it has

$$\ln TAX = \alpha_0 + \alpha_1 \ln TAX_{-1} + \alpha_2 \ln GINI + \alpha + \epsilon$$

Tax to GDP (TAX)	1212	491	191	2241
Gini (GIN)	3181	631	2561	5321
Urbanisation (URBAN)	3621	1371	1641	7121
Trade Openness (TRADE)	8661	4831	1931	22041
Per-Capita GDP (lnPCGDP)	891	51	541	2301

Data Source: The Asian Development Bank (ADB) website; inequality dataset also uses the WIID database of UNU-WIDER to have a consistent series

3.3.1 Panel unit root tests

Prior to conducting any estimations, panel unit root tests were implemented to assess the order of integration. The Levin, Lin and Chu (2002) (LLC) test and the Im, Pesaran and Shin (2003) (IPS) test are the two most extensively employed techniques to determine the stationarity of variables in panel studies. While the LLC test results depend on pooled data, the IPS test results are based on the average of Augmented Dickey-Fuller (ADF) tests for each individual series.

	Level	First Difference	Level	First Difference
lnTAX	-1.692***	-5325**		

htax

inequalities have been explored for the tax:GDP ratios of the OECD economies. Islam et al. (2018) – contradicting the theoretical predictions of the neoclassical models – showed that inequalities significantly lowered the income tax to GDP ratios of OECD countries over a very long horizon spanning from 1870 to 2011. One of the apparent weaknesses of the work of Islam et al. (2018) is their neglect of the (potential) reverse causality coming from taxes to inequalities, which has been a well-received doctrine in the extant literature. In this work, we establish that there is no evidence of the reverse causality from taxes to inequalities for the AICI economies. The main methodological weakness in the work of Islam et al. (2018) is the known inadequacy of their panel models to handle nonstationarity and autocorrelation of variables over a long horizon (see Budner & Ciccone, 2011; Ciccone, 2011, 2013). Hence we chose the (panel) ARDL methodology, being robust to autocorrelation, nonstationarity and mild endogeneity, that can simultaneously handle both stationary and nonstationary variables (see Gangopadhyay & Nilakantan, 2018).

Taxes are an important component of any economy; they play a vital part in the provision of basic public services and goods for the benefit of all citizens of a country. It is for this reason that tax authorities have been tasked by their governments with administering the tax system which entails, amongst other responsibilities, increasing the overall levels of tax compliance¹. This has become an increasingly important responsibility in light of the dependence of many economies on tax revenues and the continuous search by some African countries for solutions to the need for reduced dependence on foreign aid, and is likely to become even more important as a result of the impact of COVID 19 on already stretched government resources.

In seeking to increase levels of tax compliance, tax authorities have widely implemented traditional enforcement strategies such as tax audits and penalties (McKeehan & Evans, 2009). These enforcement strategies are, however, both costly and time consuming (Kiehl, Hezel & Wähl, 2009). As a result, tax authorities have begun to turn their attention towards identifying and promoting alternative non-enforcement strategies to encourage tax compliance.

These alternative strategies are wide ranging and include measures which seek to change the behaviour of taxpayers by making them more inclined to comply with their tax obligations. This article explores one of those alternative strategies, namely the effect of communicating reciprocity messages as a 'nudge' to encourage tax compliance.

'Nudging' (Thaler & Sunstein, 2009) has become a policy tool used by governments across many areas, including healthcare, consumer behaviour, education (Artinyan & Asatryan, 2020) and increasingly taxation, to encourage or discourage certain behaviours amongst citizens. Although the term nudging has been brought to the forefront in recent years through the work of Thaler and Sunstein (2009), earlier tax compliance studies conducted by researchers including Blumenthal, Christian and Slemrod (2001), Hasseldine et al. (2007) and Wenzel (2001) would nowadays be classified as 'nudging' studies.

'Reciprocity' nudges refer to nudges using beliefs about the use of resources by the government (Castro & Scatascini, 2015, p. 66). They can be contrasted with other forms of nudges used in promoting aspects of tax compliance, such as social norm nudges and deterrence nudges. Social norm nudges refer to nudge messages about tax compliance behaviour of others and deterrence nudges refer to nudge messages which emphasize traditional determinants of compliance, such as audit probabilities and penalty rates. Social norm nudges and deterrence nudges are excluded from this article as most studies on tax nudging have focused on these types of nudge. However, existing studies provide limited and contradictory evidence regarding the effectiveness of reciprocity nudge messages (Mascagni, 2018).

Blumenthal et al. (2001) found that using reciprocity messages as nudges had no significant effect. In contrast, Hasseldine et al. (2007) found a significant effect on tax compliance. Furthermore, the literature appears to lack evidence of the effects of the

¹ In simple terms, tax compliance can be taken to mean compliance by a taxpayer with the obligations imposed by the tax system.

time lag between the communication of a nudge message and the compliance decision. Nudge messages may decay over time if overlaid with distractions prior to making a tax compliance decision. This article, therefore, addresses this problem by testing the effects of time lag by using the manner in which messages are ordered as a proxy for time lag.

Research shows that delivering a message irrespective of the mode of delivery does not, however, guarantee that the targeted audience will pay attention to the message (Weiss & Tschirhat, 1994). In order to be effective, messages need to draw the attention of the targeted audience. The structural and content attributes of a message have been found to be linked to get attention, memory and liking of a message, all of which are important aspects of an effective message (Mogg et al., 2008).

Captures attention	The messages should capture attention, the use of colour, movement, visuals, information quantity and music can assist with this	Structural attribute
New information	The messages should emphasise information that is new to the target audience and that is essential for behavioural change	

All videos were watched in the same session. The distractor tasks were incorporated into the experimental design to distract and thus diminish the memorisation of the

results showed no statistically significant differences in tax compliance rates between females and males

18to25	16	977
26to35	4	23
Female	12	709
Male	5	291
Black/African	13	756
White	3	192
Coloured	5	29
Indian/Asian	4	23
7LC	4	23
8LC	14	81
8SLC	41	256
9SLC	6	401
10SLC	41	238

Note LC= laboratory currency

The participants fell into one of four population groups as shown in Table 4. The distribution (in percentages) of the participants across the four population groups broadly corresponds to the characteristics of the South African population group where the majority of residents are Black African (80.7%), with White, Coloured and Indian/Asian individuals as the minorities (Statistics South Africa, 2019).

The minimum income that a participant could earn from the experiment was zero and the maximum (based upon providing correct answers to 13 questions) was 10LC. Participants earned 8LC for each correctly answered question in the experiment. None of the participants earned less than 7LC and participants were spread over five levels of income (7LC, 8LC, 8SLC, 9SLC and 10SLC).

Participants' attitudes towards tax were measured by asking them to rate their level of agreement or disagreement with the four statements shown in Table 5, measured on a 7-point Likert-type scale. The lowest score (1) indicates that participants strongly agreed with the statement, and the highest score (7) indicates that participants strongly disagreed with the statement.

An exploratory factor analysis with principal axis factoring as an extraction method was conducted to determine whether the participants' responses to these statements could be reduced to one factor described as attitude towards tax. The result of the principal axis factoring was that the attitude towards tax statements could not be reduced to one factor.⁵N M

N	Non-compliant	Compliant	Mean (LO)
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For the nudge video selected as containing the fewest attributes (AMther's Love), a Chi-square test for independence was conducted to determine whether there was a difference in the tax compliance behaviour of participants who viewed the reciprocity nudge message immediately before making the tax compliance decision versus those who had a time lag between viewing the video and making the tax compliance decision. Although the results showed that 85.7% of the participants in the treatment group with no time lag were compliant compared to 71.4% in the group that had a time lag, no statistically significant difference was found to exist (p -value = 0.145).

In summary, the results indicated that there was no statistically significant difference in

The results have also indicated that there is no significant difference in the tax compliance behaviour of individuals exposed to an urgency message closer to the time of making the tax compliance decision and those who have a time lag between exposure to an urgency message and making the tax compliance decision. These findings are similar

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Introduction

Thank you for your participation in this experiment. This experiment process will take approximately 60 minutes to complete. The experiment is about participants' memory of advertisements. The researcher is [name removed], who is currently a [position and institution removed].

In this experiment you will be expected to view five videos. We want you to pay attention when viewing each of the videos because after viewing each video you will be required to perform a task which entails answering a few questions related to the video. You will earn laboratory credits, which can be converted to rand at the end of the experiment, for each correct answer. After you have viewed all the videos and answered all the related questions you will be told how many laboratory credits (and hence how many rand) you have earned as a result of your participation. You will then be required to declare your earnings as we need to withhold 31% of your earnings for income tax purposes.

Your participation in the experiment will remain anonymous. The responses you give will be treated as strictly confidential, as you cannot be identified in person based on the responses you give. Your participation in this study is very important to us. You

~~to declare~~ After you have declared your income earned participants will be asked only

sometimes, the best way to do this is to not give them all of the details about the purpose of the study.

We told you that this experiment relates to memory and advertisements and we asked you to watch a few videos and answer questions related to each of the videos after you had watched them. However, we were in fact interested in the effect of the SARS video (which may have been one of the videos you watched) on your tax compliance behaviour. There is some research that suggests that messages (or “nudges”) that communicate how taxes are spent on public goods or services (“reciprocity”) might have a positive effect on the tax compliance behaviour of taxpayers. The time lag between seeing such a video and making the tax compliance decision might also have an impact on the effectiveness of the message.

In this study, some participants watched a SARS video at the beginning of the experiment; others saw the video at the end of the experiment; and then

Identifying the factors impacting upon personal

The economic sustainability of Malaysia is for the most part derived from the collection of direct tax revenue, such as corporate taxes, individual taxes, real property taxes, petroleum taxes, and stamp duties, all of which account for approximately 65% of the national cumulative revenue, as stated in the 2020 annual Budget 2020 (Ministry of

According to the International Monetary Fund (IMF), the Malaysian economy in 2020 was the sixth largest economy in South East Asia and the 39th largest in the world (IMF, 2020). Malaysia has recently upgraded its economy to the status of a newly industrialised market economy, which is a social-economic classification employed by

integrity of Malaysian taxpayers, and encouraging voluntary compliance behaviour. One study conducted immediately after the introduction of SAS measured the perception of the taxpayers towards the self-assessment system, finding that taxpayers were more comfortable with that system than with the official assessment system (Kasipilla, 2009).

The term 'individual taxation' refers to a natural person (Inland Revenue Board of Malaysia, 2018). Self-employed individuals (SE) and salary and wage earners (SW) pay

50001 - 70000

(Lefebvre et al., 2015). The individual taxpayer's behaviour is affected and influenced by the behaviour of his neighbours, or by the behaviour of those with whom the

In the above context, Kasipillai and Baldy (1998) have found that better interactions between the Inland Revenue Board (IRBM) and taxpayers cause better tax compliance. It has also been suggested that the Malaysian tax compliance level may increase if the tax collection authority upgrades the relevant technology for the benefit of taxpayers (Abdul-Jabbar & Pope, 2009). Experiments reveal that people who are treated fairly with good acknowledgment by the authorities tend to comply more with the tax system (Baithwaite, 2009). The Organisation for Economic Co-operation and Development (OECD) (2010) explains that among the three types of fairness in taxation, two namely procedural fairness – the perception that the tax authority is just and fair in dealing with citizens – and distributive fairness – the perception that the tax authority is fair in applying penalties – are relevant to how the tax authority deals with taxpayers.

If this study finds a significant relationship between the tax authority dealings and the compliance behaviour of the taxpayers, the modern risk treatment model named 'Right from the State' adopted by the Swedish Tax Agency could also be recommended to the Inland Revenue Board of Malaysia for adaptation. The Swedish Tax Agency introduced 'Right from the State' as a compliance method based on the principle that the tax authority has a role to play in creating an environment which encourages compliance. Skatteverket (2005) introduced the 'Right from the State' model⁶ to be used in taxation to prevent errors that can occur when seeking to achieve and improve tax compliance among taxpayers, based on the principle that the tax authority has a role to play in creating an environment in which tax compliance can be lifted to a higher level.

Studies that have focused on the relationship between government spending and the tax compliance behaviour among taxpayers in developing countries are very scarce. Due to the unavailability of empirical evidence to explain the relationship between government spending and tax compliance, it is assumed that taxpayers are concerned to ensure that the government spends their tax contributions justly and reasonably in keeping with its needs and requirements (Palil et al., 2013).

Domerbag (2015) explains that taxpayers, especially those who pay high levels of taxes to the government, carefully and vigilantly observe the activities of the government with regard to its spending of their money, their contribution of tax, so as to know how much of money is withdrawn from the government budget to be spent, what the money is spent for, and so forth (Mchari, 2000). Similar findings have been obtained by Alakfur, Sany and Bampton (2016) in the case of Jordan, where the non-compliance of citizens with the tax system is normally acceptable since the people of Jordan have formed a negative impression of the government and its spending due to perceptions of its engagement in corruption and misuse of the taxpayers' money. The purpose of that study, using a survey questionnaire with a multivariate test procedure, was to investigate how the individuals in Jordan determine their tax morale level and their tax compliance level. The findings revealed that if the expenditures made by the government with the taxpayers' contribution had been considered worthwhile, taxpayers' thoughts for non-compliance would be negated. It is also assumed that taxpayers tend to avoid paying taxes to the tax authority if they predict that the

⁶ The 'Right from the State' model investigates the issues in taxation that cause tax non-compliance, analyses the root cause

expenditures made by the government are not as fruitful and beneficial as they should be (Bathwaite, 2009).

To minimise the impact of tax compliance on individual taxpayers who work in

According to Ayes et al. (2019), in business managers' decisions to comply with the tax system are determined by the probability of audit. The study by DeBaker et al. (2013) put forward a different view claiming that legal enforcement increases tax aggressiveness, which prompts the corporate sector to take action to reduce tax payments after an audit. Businesses comply with the tax system more when they have the probability of their businesses being audited by the tax authority, and soon after the audit, they become non-compliant with the tax system. Such a pattern of behaviour in businesses is termed a U-shaped impact. Subsequently, D'Agosto et al. (2018) stated that there is a positive and significant relationship between tax audit and tax compliance. Different types of audits are carried out by the tax authority initially, relating

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PTAX9	I feel that I have made a positive contribution to my country by fully reporting all of my income	SATS1	I believe the government utilizes a realistic amount of tax revenue to achieve social goals
PTAX10	Scenario question	SATS2	I think the government spends too much tax revenue on unnecessary welfare assistance
SATS3	The revenue authority has extensive means to force corporations to be honest		

Tax Officer 2030: the exercise of discretion and artificial intelligence

Duncan Bentley

This article examines the principles underpinning effective decision making and the exercise of discretion in Australian taxation law in the context of the development of digital government and the increasing use of artificial intelligence. The article proposes a framework for the exercise of discretion by the Australian Taxation Office (ATO) in decision making involving expert systems and emerging supervised machine learning and deep learning consistent with administrative law. The framework is of wider relevance to public sector delegated decision making and it draws on relevant principles and case law. It identifies the capabilities the ATO requires to implement this framework and maintain public trust in the new systems in use. **mm** **tt** **is**

The Organisation for Economic Co-operation and Development (OECD) has highlighted two dimensions facing post-COVID governments: a trust deficit and exponential digital change (OECD 2020 p 5; OECD, 2022). Bentley (2020) p 376 analysed the changing nature of tax administration and its workforce in a literature review across multiple disciplines. That article demonstrated the importance of building and developing the necessary skills and capabilities of tax offices, which will achieve the dual result of increasing citizen trust and well-being and protecting the revenue base.

Building digital government with the requisite skills and capabilities to ensure its efficacy and maintain public trust remains a major policy plank of Australian governments through the Commonwealth Digital Transformation Agency, which in turn supports State governments and agencies (Digital Transformation Agency, 2022, pp 5-9). Important for this article is that the two aspirations of the Australian Taxation Office (ATO) embrace both digital transformation and building public trust and confidence in the tax system (ATO 2021, p 12).

However, the efficacy and public trust impacts of several major digital government initiatives have been brought into question, as seen in submissions to the 2021 Senate Standing Committee on Finance and Public Administration References Committee Inquiry into the current capability of the Australian Public Service (APS), for example that of the influential independent Centre for Policy Development, which was scathing in its assessment of ongoing critical delivery failures across Australia (2021).

These difficulties are not surprising as evidenced by the Australian Public Service Commission (APS) submission. The APS as the body responsible for oversight of the Commonwealth public service noted that in 2021, '[t]he APS Workforce Strategy is being finalised to 'set a whole of enterprise direction' and 'is likely to focus on... action areas' including 'enhancing data and technology' (APS, 2021, pp 13-14). It is clear from the submission from government agencies that while capability is critical, the work to deliver it is in its very formative stages and will take some years to deliver.

For tax administration, public trust is fundamental to engaging with taxpayers, ensuring voluntary participation, and building and maintaining high levels of compliance, as has been established by decades of research nationally and internationally in a context of technological change (Kirdler, Holzl & Wahl, 2008; Gargl, Hofmann & Kirdler, 2015; Bentley, 2016; ATO 2022).

The OECD argues that the incorporation of digital technologies 'into the design of policies and services from the outset can help generate improved human and organisational capacities for information and knowledge management, especially for service design and favour more convenient and tailored delivery' (OECD, 2020) pp 9-10. Achieving this effectively reinforces the necessity to develop the digital knowledge, mindset and skills among all public officials (OECD, 2020) p 10; OECD, 2021a). In an earlier framework setting out the facets of a data-driven public sector, the OECD identifies that a core requirement to maintain public trust is to adopt an ethical approach to guide decision-making using data and digital capabilities (OECD, 2019) p 130. These characteristics are fundamental to the effective operation of the future tax system.

As digital government and tax administration expands and creates multiple dimensions of interaction with citizens across platforms and ecosystems, the nature of decision making and the exercise of discretion will remain critical to maintain public trust (Gavaghan et al., 2019). Australian tax administration has faced this challenge many times over the years during its development. One of the most significant examples was the introduction in 1992 of the binding tax ruling system in Part IV of the Taxation Administration Act 1953 (Cth) in conjunction with the introduction of self-assessment. The ATO had to build public trust in the new system over a period of years, while transforming its own capabilities.

The challenge is set out in the joint Automated decision making better practice guide (Commonwealth Ombudsman, Office of the Australian Information Commissioner &

Those principles set out in Part 1 of the ARC Report, directly pertaining to automation that forms part of, or affects decisions requiring the exercise of discretion, can be summarised as follows (ARC, 2004), and apply equally to emerging systems. Required amendments of the principles to take account of technological development since 2004 are included in this summary, although the operational implementation to support the principles has transformed since 2004 and the 2019 OIG Guide provides a more recent, although already incomplete guide, given technological development, to how agencies should apply the principles in practice.

Expert systems should not automate the exercise of discretion; they should not make a decision requiring that exercise unless it is submitted, within principle support from the 2019 OIG Guide, it applies beneficially to the person affected, or it appropriately involves the person affected who either consents or requests the decision to be made (this could increasingly become the case with advanced routing, transfer pricing or international exchange of information requests, for example) (Commonwealth Ombudsman et al., 2019 p 9).

Expert systems can be used as an administrative tool to assist an officer in exercising discretion. The original principle was based on newer technologies and provided the automation should not recommend or guide the decision maker to a particular outcome. This is a principle which the 2019 OIG Guide has appropriately updated (Commonwealth Ombudsman et al., 2019 p 10) and is discussed below.

Expert systems so used must accurately and consistently reflect government law and policy (Commonwealth Ombudsman et al., 2019 p 10).

If an expert system is used to make, rather than assist in making a decision, it should be legislatively sanctioned to maintain the legal principles of authorised decision making, preferably including where the authority to override the system rests.

Both the system's construction and the decisions made must comply with administrative law to be legally valid (Commonwealth Ombudsman et al., 2019 p 9).

Expert systems must comply with relevant requirements governing, in particular, privacy, disclosure, freedom of information and statements of reasons (Commonwealth Ombudsman et al., 2019).

To comply with these principles, there should be a team which designs, constructs, maintains, monitors and tests the expert systems, which combines technical and legal and policy experts (Commonwealth Ombudsman et al., 2019 p 18).

This team should use the most advanced techniques to allow expert systems self-evaluation and error detection (including human manipulation) and ensure that there exist comprehensive audit trails which can be reviewed (Commonwealth Ombudsman et al., 2019 pp 19-27).

Expert systems should be appropriately funded to support the decision making and this extends to ensuring continuous data quality and storage, training for decision makers, and regular updating, including contingencies to ensure decisions remain accurate pending upgrades for changes (Commonwealth Ombudsman et al., 2019 pp 19-27).

Expert systems must be capable of both internal review and external scrutiny (Commonwealth Ombudsman et al., 2019 pp 1927).

Expert systems should take account of equity, access and service requirements of administration (Commonwealth Ombudsman et al., 2019 pp 1927).

In reaching its conclusions in 2004, the ARC reviewed the intelligent systems then available, including legal expert systems capable of self-learning and using neural networks that 'try to replicate the processes of the human brain' (ARC, 2004 para 21).

In applying the system to administrative decision-making processes it identified the importance of applying legislation and policy to an individual's circumstances, noting that expert systems form part of the knowledge management framework whereby agencies can improve their capacity to apply a consistent interpretation of complex legal rules and policy. In the context of 2004, the ARC concluded that '[T]he main dangers associated with the introduction of expert systems of this sort are in the

Moshinsky and Denington JJ in a majority decision found, following *Senarigis v Minister for Immigration and Multicultural Affairs*⁹ that the authorised officer had not reached a conclusion on the renunciation of the general interest charge, and therefore no decision was made. The requirements for the exercise of discretion in reaching a decision were not only subsequently. Their Honours held

In order for there to be a decision to remit GIC under s 8AAG of the [Taxation Administration Act 1953 (Cth)], we consider that there needs to be both a mental process of reaching a conclusion and an objective manifestation of that conclusion. In the present case, on the basis of the findings of the primary judge (which are not challenged on appeal) there was no mental process of reaching a conclusion.¹⁰

A further factor on which the majority differed from Ker J was in accepting that this might lead to unfairness, while noting that it is 'unlikely to arise very often'.¹¹

The position of the majority in *Pirtaich* is consistent with the ARC (2004) principle discussed above, that expert and emerging systems should not automate the exercise of discretion: they should not effectively 'make' a decision requiring that exercise. That was the effect of the automated letter sent in *Pirtaich* to the taxpayer (even if the level of automation claimed by the Commissioner does not seem credible). While one can have sympathy with the minority view that automated decisions are unexceptional and not to accept them could lead to unfairness, this position conflicts with the ARC (2004) principle that both the system's construction and the decisions made must comply with administrative law to be legally valid.

Hong and Hui (2019) p 892 argue that the pragmatic approach of Ker J 'recognises that the legal conception of what constitutes a decision should evolve to reflect the reality of how decisions are made in the age of digitalisation'. This is 'dearly preferable', they state, 'to the rigid approach of the majority in *Pirtaich* that suggests discretion can only be exercised by a human decision maker' (Hong & Hui, 2019 p 892). This argument seems to miss the point that the legal requirements for the exercise of discretion were not met.

The courts should not be put into the position of their Honours in *Pirtaich* that they must second-guess or reconstruct processes to compensate for poorly designed or improperly used systems. The implications of automation, as artificial intelligence becomes more generally applicable, simply place the responsibility on those using these systems to assist in or make decisions, to ensure that the systems meet the requisite design and implementation that allows for the making of a valid decision and that those using them are properly trained. Nonetheless, the changing nature of systems means that the approach to recognising the valid exercise of discretion does need to change.

Before examining the nature of the exercise of discretion, it is important to determine whether administrative law principles themselves have changed since the 2004 ARC Report. Ng et al. (2020) pp 1045-1048 review the principles recognised as underlying Australian administrative law and conclude that

agreement both before and after the ARC (2009). They review the implications of the principles as they are applicable to different examples of administrative automation and related areas of the law such as privacy, access to information, and freedom of information (Ng et al., 2020) pp 108-105).

Gaps they identify focus largely on application of the traditional principles and how they might adapt or vary to apply to automated administration rather than questioning the substance of the principles. Ng et al. (2020) pp 106ff) draw on international principles, human rights legislation and case studies to derive recommendations for reform in Australia. These are useful and those that are relevant to automation and the exercise of discretion in delegated decision making by the ATO are incorporated into the discussion below.

Earlier decisions rely on the existing administrative principles. There is nothing coming out of the cases which suggests that they should change. However, what needs further analysis is the nature of a decision. The roll-out of digital government creates some urgency. However, it does not require subversion of administrative law principles. Rather, it requires a better understanding of how those apply where it involves systems using AI.

This is because, as agreed by Ng et al. (2020) p 102), systemwide automation of government decisions means that 'deficiencies in the design, implementation or operation of automated systems have the potential to violate the rights of a large number of individuals. Therefore, public law should ideally adopt an approach that is also capable of addressing systemic issues'. This was evident in both *Robobit* and *Pittrich*.

How then to address the design of decision making requiring the exercise of discretion in the context of AI, particularly, in the context of developments in AI and machine learning? See R. M. d. a. w.

Albu and Flyvholm (2019) note the limited evidence supporting transparency or

ordering of their affairs). This approach is consistent with the application of administrative law decision making embedding AI.

Lytard in *The Postmodern Condition* (1984), explores the intersection of science and justice. While his arguments are contested (Janason 1984), he focuses on the concept of narrative as a context and legitimation for the scientific method (Lytard 1984 p 35). This starting point is therefore useful where he argues that science or laws must satisfy a certain set of conditions to exist (Lytard 1984 p 8) – the formalism of law – but where these conditions are themselves valid, just or ethical because they are consistent with the contextual and particular narrative and validations surrounding their exercise and interpretation.

Applying it to AI or automation, to be scientifically legitimate to meet that definition, for example in Section 238(g) of the United States John S. McCain National Defense Authorization Act, the AI or automation must be designed in accordance with the required formulation for those purposes. So too must the legal rule governing the subsequent exercise of discretion where that engages with AI or automation. Nonetheless, the scientific legitimation, the legal rule and the exercise of discretion are subject to a narrative to provide context, rationale and completeness.

As Davies (1994 p 226) argues, ‘the ideal of scientific completeness is logically unattainable. Thought which is systematised necessarily relies upon assumptions which cannot be demonstrated in the terms of the system itself. This narrative is not discernible as a grand narrative that is universally consistent and ubiquitously applied. Rather it recognises that each person’s interaction with the law and each decision exercising the adjudication or discretions permitted or required by the law is influenced by the multiple complexities of the individuals and influences at that point of time in their particular situation (Commonwealth Ombudsman 2017 pp 1922). Administrative law recognises this by delegating discretion.

The narrative does require for legitimacy a communitarian overlay of justice on any decision, even when taken within the appropriate legal framework. Hence the ongoing relevance of Adam Smith’s call (1984) to understand the basic assumptions used in the construction of a tax system is relevant to the current discussion when a tax

As noted above, legal change is messy, particularly in a common law jurisdiction and even messier in a federation like Australia. Nonetheless, the common law provides for change.

My hypothesis is that the administrative law provides for judges to move from traditional concepts of exercise of discretion as a single event to how discretion is

deemed valid without trying to reconstruct every step in a computational exercise that is now beyond segmentation at that level of detail. To take an oppositional view is to revert to a literal, positivistic view of the law not seen since before the industrial revolution

To take an example, the valuation of trading stock at year end requires specific measurement each in one year under Division 70 of the Income Tax Assessment Act 1997 (Cth). In an aluminium smelter process no judge or delegated decision maker has held that the exercise of discretion in valuing the liquid metal in the smelter at year end needs to be tested by disassembling the smelter to ensure the machinery is working as designed and assessing each component at each stage of the smelting process to calculate its value in its molten state. It could not be done as the value would immediately be lost.

There is no impediment in theory or practice to the administrative law changing to reflect the reality that the exercise of discretion that includes use of AI or advanced automation is necessarily a process rather than an event. The process reflects the principles outlined by the ARC Report of 2004 and as updated in the 2019 Cth Guide (Commonwealth Ombudsman et al., 2019). It also recognises all elements of the exercise of discretion from the human decisions required in the design, building, validation, operation and monitoring of the model to those required in using its outputs.

Legislative or regulatory changes or judicial decisions that significantly alter the law can alter the basis for the exercise of discretion. This will impact directly on AI and advanced automation as the model will no longer be consistent with the law unless those updates are capable of automatic integration. Even where they are, the principle for monitoring, validation and quality assurance would necessarily apply and in the same way as written materials are updated for use by decision makers exercising discretion where the law changes, so too should all elements of a process that incorporates AI or advanced automation.

Bentley's (2007, ch 8) analysis of the requirements for the appropriate exercise of discretion in taxation, both reviewable and non-reviewable, still stands. The essence is that decisions in tax administration should be reasonable, based on criteria or standards, and fair (Bentley, 2007, p 298; French, 2001, p 33). Note that this formulation goes to how decision makers should exercise discretion and does not go to the narrower conditions for review.

Chief Justice Gleeson (2006) stated that the exercise of discretion is not to be confined to the narrow conditions for review.

The High Court in *Minister of Education v Meiorin* (1997) stated that the exercise of discretion is not to be confined to the narrow conditions for review.

public trust in an AI supported system (Gavaghan et al., 2019). Unfortunately, private companies globally have misused AI sufficiently to reinforce these fears (AHRC, 2021). Concerns about due process, bias, discrimination, inequality, access, confidentiality, privacy, blatant misuse or theft of data and intellectual property, and general lack of consideration of ethical and human rights issues in AI design are well-founded and evidenced throughout the AHRC Report and in the submissions made to it.¹⁵

The principles of administrative law are sufficiently robust to support embedded AI in decisionmaking and specifically for the purposes of this article, tax decisionmaking

is a valid support for that endpoint decision, including whether the process accurately and consistently reflects government law and policy. Neither does legislation or regulation ensure that all elements of the system protect those relying on the law and the system.

Therefore, in recognising that the exercise of discretion is a process with multiple inputs and several significant steps, the ARC Report (2004, Part B) principles focused on system design and implementation remain broadly relevant, current and appropriate in embedding AI into effective 'administration by design' (Commonwealth Ombudsman et al., 2019):

The important additional component for the creation of an effective regulatory framework, digital government and digital tax administration is the human capability to deliver it. The article outlines the primary specialist capabilities needed to design, build, test, implement, monitor and review AI systems in tax administration. As digital government goes to scale, the AFS has already identified the significant skills gaps in

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