

Resource Management: Fragmentation of Land Ownership and Its Impact on Sustainability of Agriculture

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Abstract

The inevitable implications of fragmenting farmland ownership are (i) uneconomic land sizes and farm operations, (ii) greater tendency to convert the farmland to other uses (and hence, the subsequent decline of food production capabilities of the country as a whole) and (iii) under-investment in the land as co-owners disagree on how land should be utilized. Fragmentation of ownership occurs in two ways, one is through the practice of distributing a deceased's assets based on the literal application of the Fara'id calculations. Another is through formal and informal credit arrangements using land as a form of collateral. The implications of land fragmentation go against the government efforts to revitalize agriculture for trade and food security objectives. This paper evaluates land fragmentation problem in Malaysia and suggests policy-improvement measures that can be adopted by the present land resource management authorities.

I. INTRODUCTION

One of the most enduring and pervasive problem in the food production sector is uneconomic farm sizes. The Malaysian government has made various commendable efforts to provide technical support, R&D facilities, rural and farm infrastructure and so forth, yet these efforts still appears inadequate to curb the declining interest in food farming, particularly in respect to rice production. Cost of rice production in Malaysia is high due to decreasing pool of farm workers, higher fertiliser cost and not least, the problem of land speculation especially if the paddy land is located at the urban fringes. It would be hard to dispute that for a farm to be profitable in Malaysia, one of the pre-conditions would have to be reasonable operational sizes (apart from better mechanisation, market control and protection). In other words, widespread uneconomic farm sizes and continuous breaking up of existing plots would only jeopardise the sustainability of overall agricultural hectareage and output. Active smallholders (those who have not left agriculture voluntarily or due to old age) are usually trapped in the twin problem of **small** uneconomic production sizes and **high** land prices due to speculation. This meant that the farmers have very limited opportunities to expand even if they want to. At some point, they may even opt to withdraw from agriculture.

The following statistics may help us appreciate the extent of land abandonment and fragmentation in the smallholder sector in Malaysia. The 1960 Agricultural census shows that 59 per cent of all farms were less than 4 acres, and over 80 per cent of the rice farms were not

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owned by cultivators. The period saw high rates of poverty and landlessness amongst the Malays. As at 1981, the Ministry of Agriculture identified 890,000 hectares of abandoned agricultural land and of that amount, 18% was rice land (Sahak, 1987). For the period 2001-2005, the Ninth Malaysian Plan (p.85) still reports that 163,000 hectares are idle. Despite general interests seen in the media and in public discourses, the problem of abandoned land in Malaysia remains relatively unexplored, nor effectively resolved. Well-known causes of land abandonment include structural (uneconomic operation size, poor soil quality, insufficient water, elevation, access) or economic (cost of input, market power, price fluctuations) group of factors. This paper focuses on the factors that contribute towards uneconomic land size, which we believe contributes in a significant way to low agricultural returns and subsequently land abandonment.

The paper is organized as follows. Section I provides some overview of the changes in economic structure and consequently the changing emphasis on agriculture development. Section II goes into detail the two land fragmentation channels. Section III re-emphasizes certain strategies and proposes new ones to address the fragmentation of land while Section IV concludes.

II. BACKGROUND

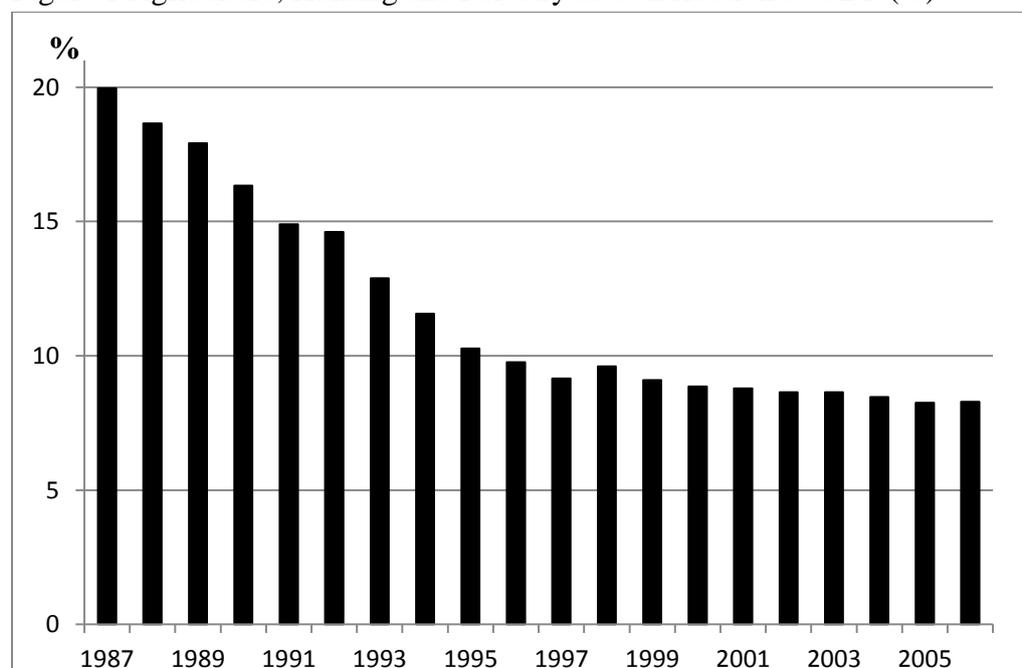
Economic diversification efforts which began in the 80's, witnessed the rolling back of public sector expenditures including for agriculture, to give way to private sector-led growth. A massive industrial development programme was duly launched, initially aimed at promoting import-substitution economic activities as well as agriculture's downstream industries. Various policies and incentives included in successive Industrial Master Plans were specifically tailored to reduce the cost of adjustment and time lag for the country's resources to be transferred, particularly land and labour, from agriculture to newer sectors especially manufacturing and heavy industries. A great number of papers have been written about the near stagnation of agriculture, especially traditional agriculture, since 1980 by linking it to the "Booming Sector Syndrome" (see Kamal Salih for example, 1990).³ The economic transformation strategies paid off handsomely in the form of high growth rates in the period between 1987 and 1997 just before the Asian financial crisis. Malaysia also benefited immensely from its strategic location in the middle of the dynamic Asia-Pacific region to emerge as one of the region's Newly Industrialised Economies (NIEs). However, it appeared that the transformation from an agriculture and mining-based economy to one that is industrial-based took place at such great speed that the agricultural sector, particularly the small agriculturalists, was not able to adjust and maintain their significance in the overall economy. Attention to agriculture faltered at almost all political, commercial and individual levels.

Adverse commodity market conditions, smaller manpower pool and technological deficiencies continued to hamper growth in income from agriculture relative to that of the newer sectors, particularly in the 90's. This can be deduced from Figure 1 which showed the

³ The Booming Sector Syndrome refers to a situation where non-agricultural sectors such as oil and gas production, manufacturing, construction, timber having relatively prospered, diverted a large proportion of the available investment in capital, young, high quality manpower and land from agriculture.

rapid rate of decline in value of output from agriculture, hunting and forestry as a percentage of GDP between 1987 and 1997. By 1995, contribution of agriculture to GDP fell to half the level it was in 1987. The first and the second National Agricultural Policy (NAP)⁴ which were drafted to promote modernisation and commercialisation of smallholder sub-sectors had grossly underestimated small farmers' ability to adjust to the rapid changes occurring within and outside their communities and the attractive income from non-agricultural employment. The government also admitted to "leakages in the delivery of (agricultural) support programmes" (Sixth Malaysian Plan 1991:p. 104). To a great degree, land lost its importance as an investment instrument for the individual as the new economy brings forth a wider and more attractive array of investment opportunities to suit both hedging and capital growth requirements. New educational and employment opportunities which had been limited in the past considerably reduced interest in farm work, causing critical labour shortages for the farms. Table 1 shows that labour force engaged in agricultural, hunting and forestry activities almost halved within a span of ten years between the period 1987 to 1997 (from 28.6% to 16.9%).

Figure 1 Agriculture, Hunting and Forestry as Contribution to GDP (%)



Source: Department of Statistics, Malaysia

Table 1 Agricultural Workers as a Percentage of the Labour Force

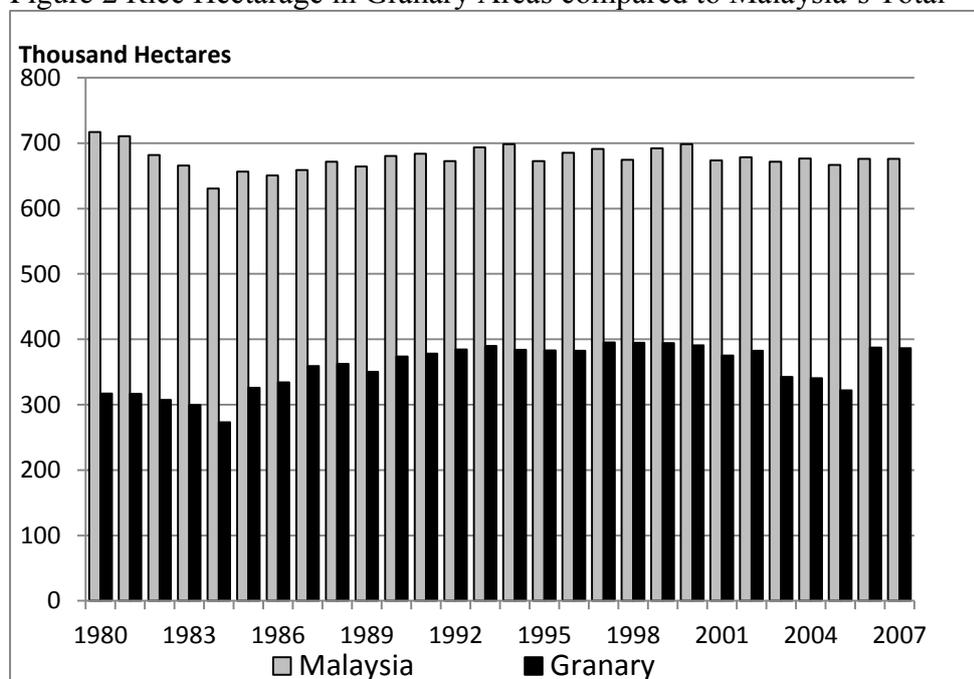
Year	1982	1987	1992	1997	2002	2007
Total Labour Force	5431	6457	7319	8784	9886	10889
Employment in Agriculture, Hunting and Forestry	1636	1846	1536	1481	1317	1437
Percentage	30.1	28.6	21.0	16.9	13.3	13.2

⁴ The first NAP ran from 1984 to 1990 while the second NAP should cover the period between 1991 and 2000. In the wake of the Asian currency crisis, a third NAP (1998 – 2010) was put together to immediately address past weaknesses or gaps in policy and delivery system formulated in the previous NAP's.

Source: Department of Statistics, Malaysia

With respect to land, the period saw exponential growth in non-agricultural demand for land. Non-agricultural companies began to acquire large land stocks purely for capital gains and inflation hedging purposes; whilst more applications were made to convert agricultural land to commercial, residential or industrial lands. The seemingly unrelenting trend and the uncoordinated way agricultural land were approved for conversion brought far-reaching consequences on remaining agricultural interests. Interest in food production was already weak both as far as the farmer and the public are concerned. In the 3rd Malaysian Plan (1975-1980) document, the Federal government declared that they were ready to increase imports of rice if world prices continue to be lower than domestic prices.⁵ By 1993, the self-sufficiency target for rice was down to 65 per cent as the sector grapple with a declining supply of agricultural manpower and land resources. Figure 2 shows that the total rice planted area (from granary and non-granary areas) fell slightly in the early 80's then returned to previous levels but continued to stay constant despite increasing demands for rice from a growing population. It also useful to note that the rate of land expansion for the cultivation of food crops continued to lag far behind that of export crops (compare Figures 2, 3 and 4 for rice, oil palm and rubber hectareage growth respectively). Higher demands for food from the growing urban population did not translate into higher demands for local produce mainly because: (i) of cheap foreign imports and; (ii) the urban diet which was increasingly leaning towards foreign fads and cuisines which did not really involve local produce.

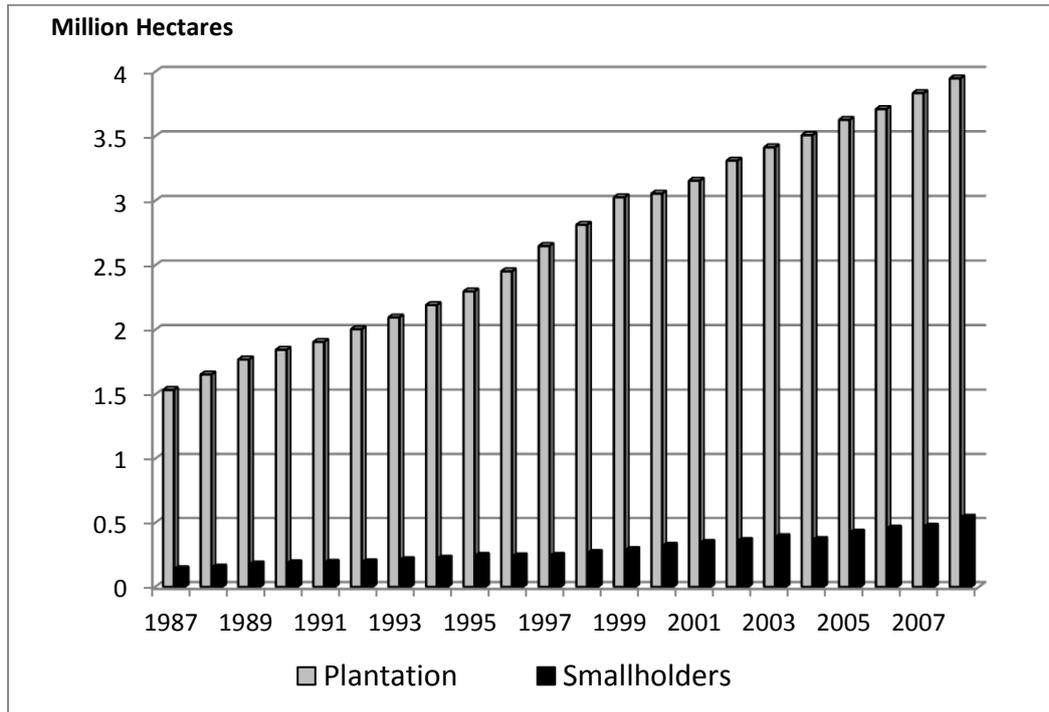
Figure 2 Rice Hectareage in Granary Areas compared to Malaysia's Total



Source: Department of Statistics, Malaysia

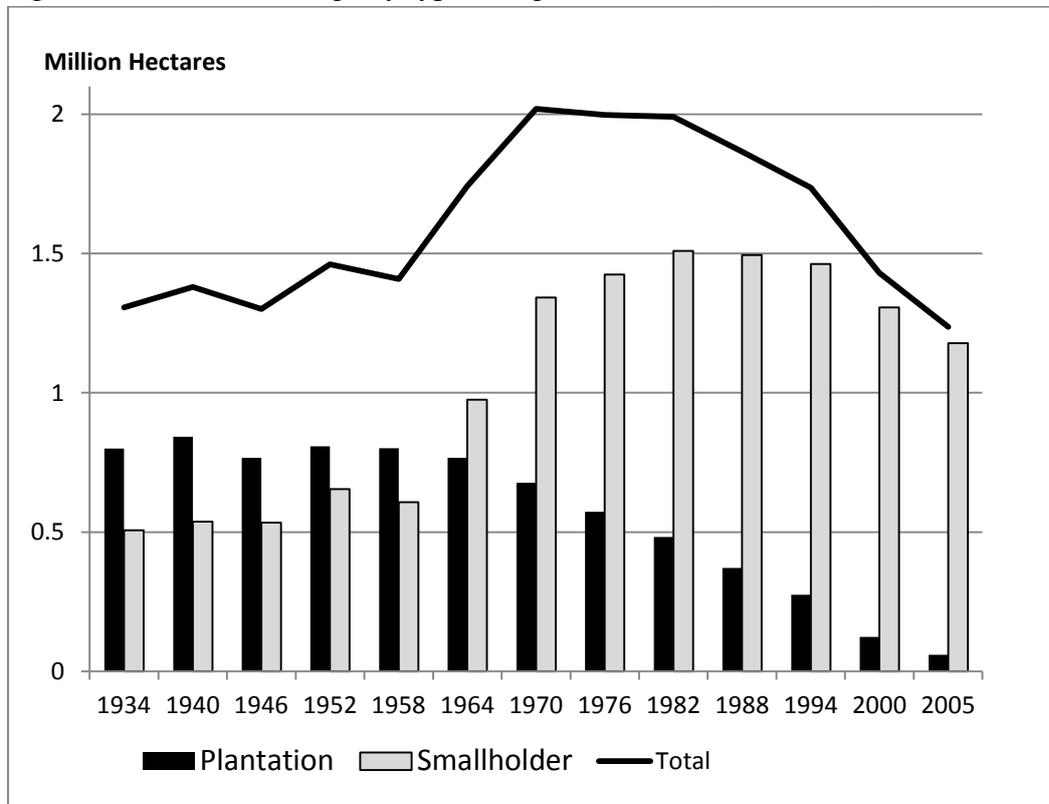
⁵ There are presently eight granary areas – five in the west coast, two in the east coast of the Peninsular and one in East Malaysia. Granary areas are basically agricultural areas which have received agricultural infrastructure that was aimed to improve rice production yields.

Figure 3 Oil Palm Hectarage by type of Agriculturalist (1987 - 2008)



Source: Department of Statistics, Malaysia

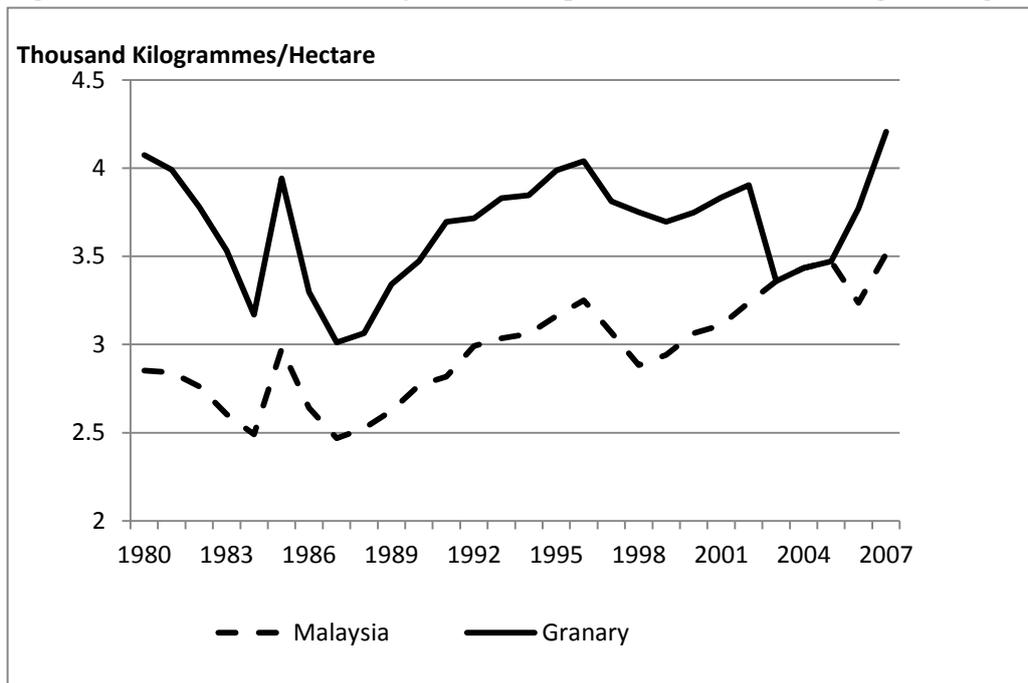
Figure 4 Rubber Hectarage by type of Agriculturalist (1934 – 2006)



Source: Department of Statistics, Malaysia

For agro-food sub-sector, Figure 5 compares rice production yields between the average farmers in the country versus farmers in the granary areas (who are more organised than the rest of the rice farmers). Rice production yields per hectare in the granary areas are almost double compared to average yields, although both areas display similar yield patterns over time. The figure demonstrates that a wide income gap exists between the smallholders and organised agriculturalists. The former are expected to be more vulnerable to shocks in the market for output or input and hence are more likely to sell their land or leave their farm uncultivated for more stable income sources. On the other hand, granary schemes' advantage lies in their large production area, which can be exploited more efficiently and more sustainably with mechanisation and better management to achieve higher yields rates.

Figure 5 Rice Yields in Granary Areas compared to National Average (Kilogramme/Hectare).



Source: Department of Statistics, Malaysia

III. CHANNELS OF LAND FRAGMENTATION

The Torrens land registration system introduced by the British in 1896 produced land titles to the Malays according to the area of land they were actively occupying and cultivating at the time; whereas foreign investors were given titles of large tracts of unoccupied land to stimulate a capitalist economy based on the lucrative rubber market. In other words, the land policies at the time created two separate classes of landowners: the large plantations and the smallholders. Over time, the latter group's land-per-person ratio became smaller as (i) some fractions of land were lost through informal credit systems or (ii) when the land is passed from one generation to the next. We describe the two fragmentation channels in the following sub-sections.

I. Credit channel

In the traditional land system, ‘sale’ of land typically involved paying *pulang belanja* or ‘returning expenses incurred on the land’. The premise for this transaction is that the land never belonged to the vendor but the Creator, hence the vendor should be compensated only for his efforts to clear the land in the beginning plus whatever improvements he brought to the land over time (Fujimoto, 1983). In contrast, the Torrens system dictates that the registered owner of the land possesses full and indefeasible rights of the land’s utilisation and disposal, whether in exchange with other goods or money. Since direct borrowing with interest is not allowed in the Malays’ Muslim faith, and formal credit sources are almost non-existent, a system of “conditional sale” was the popular mode of lending (Mohkzani, 1995). In this system of *jual janji*, a person ‘sells’ his property for a sum of money and surrenders his land title to the buyer. He would then be allowed to pay back the loan interest-free in instalments to regain ownership of the land. However, if the seller/debtor wished to continue working or staying on the land, he must enter into a supplementary contract in which the he became a tenant of the buyer/creditor. Defaulting on the loan and the rental would result in the land sale to be ‘complete’ i.e., realised; or *putus* in the Malay language. Losing land by this method was not uncommon since the simple farming methods and uneconomic land size seldom left much surplus for loan servicing and rents.

Another form of farmer’s credit involving land was the *padi kunca* system. Farmers often relied on middlemen for pre-harvest credit; for which re-payment was made during harvest time in *kuncas* (a volume measure) of rice. Because the price of rice is usually lowest at harvest time, one *kunca* of rice is valued less during harvest time than pre-harvest time. Usually the farmer had to surrender more *kuncas* to the creditor compared to the value of loan. Needless to say, this practice pushed the debtors deeper into debt. The creditors or middlemen would soon amass large amounts of land which they are neither able nor interested to operate in any efficient way (especially since the parcels are generally small in size and are scattered all over the area). These parcels are then leased to new individuals as tenanted land. Such land-based market for credit grew to correspond to the increase in the local population and influx of the more finance-savvy Chinese and Indians. The informal credit systems of *jual janji* and *padi kunca* were largely responsible for land concentration and the problem of landlessness and inequity in the society. The rate of land transfers from Malay interests to Chinese or Indian middlemen had become so worrying that by the early 1950s, various forms of Malay Reservation land regulations were introduced by the state authorities to disallow designated Malay-majority areas from being transferred to non-Malay individuals.

II. Inheritance channel

Land titling has also caused significant changes to the way the land inheritance is recorded and executed. Many Muslims die intestate and this usually leads to complicated asset division issues. The Islamic law of inheritance laid down specific details of inheritance and shares of the whole estate allocated to the various types of heirs. For the Malays, in absence of other significant assets, a deceased’s land must be distributed to all heirs according to their respective inheritance shares. This creates situations whereby two or more people inherit a title in various individual proportions as a result of which none can take ownership of the land until others have renounced their right to the inheritance voluntarily or in exchange of

other assets or payments (buy out the others' shares in the land). The title registration system allows co-ownership of land to be recorded on the title although partitioning the land is a possible option.

If one of the heirs passes on before the land-partitioning or buy-out process is completed, then his or her heirs will be added to the existing list of heirs, although their collective share is limited to what is inheritable by their deceased father or mother in the first place. In some cases the number of heirs has become so large that many are no longer reachable for decisions. Naturally, the extent of **transaction costs** from negotiation and administrative procedures involved to obtain mutually agreed decisions regarding the parcel would be enormous. It would make sense to set up a firm to manage the land and assume the heirs' interests as shares in the firm, but this is only economically worthwhile if the land parcel is considerably large and highly productive. With respect to small holdings, the heirs usually find it more practical to sell the whole parcel collectively (regardless of the market price for land for a quick and swift solution) or partition the land. The latter move will allow the individual heir to independently decide what is to be done with their portion of the land.

Ensuing co-ownership issues related with land fragmentation can sometimes turn very complicated, and in its extreme may prevent farming on the land altogether. Transaction costs (over and above the standard costs associated with land division or land assemble) to deal with unprofitable and so-called 'problematic' landholdings have the effect of creating individual inertia that prevents agents from cultivating and transacting as much of the assets as they would like in that period or even forever; i.e. the market cannot reallocate land efficiently. Landowners or co-landowners may be forced to release their land earlier than necessary to 'unload' problematic holdings and move on. On the other hand, buyers may refrain from 'problematic' land parcels even if it is economically sized if they expect substantial delay and complications in securing full rights to the land. As a result, the market would eventually equilibrate at lower than competitive prices.

Issues relating to co-ownership of land are not easily resolved even with intervention from government agencies. For instance, all co-owners must agree to surrender their decision-making rights to one of them through the use of Power of Attorney before the land can be included in government agricultural schemes. Obviously this is to ensure simpler negotiations and payment processes. However, not all in the family may agree or are interested in such long term commitments, not to mention are willing to bear the legal and administrative costs of registering their individual claims (particularly if their respective stake is very small and they are also very poor). In general, many would prefer a one-off payment from selling their stake in the land rather than annual dividends from the land's use. It is hardly surprising that a large number of inherited plots of land are left unsold **and** unutilised. It is reported that as of January 2007, there are unclaimed properties and land worth a total of RM330 million and approximately 1,000,000 land titles which have not been transferred to the rightful heirs either because they cannot be tracked or cannot come to an agreement to mutually benefit from the division of the estate (Amanah Raya Berhad, 2008). This problem is not exclusive to Muslims but to other ethnic groups as well since the level of awareness regarding estate planning is still very poor across the board.

To illustrate, let's take a case where the original landowner passes away and leaves five acres of land for his heirs namely, one wife, one daughter, and two sons. If they literally

divide based on *faraid* system each of them will get their respective shares i.e., 1/8 for the wife, daughter 1/5 and two sons 2/5 respectively. Assume further that the land is then sold to a third party for a price of RM 15,000 per acre. On the other hand, if all the heirs agreed that instead of dividing the land, they could hold on the land collectively, continue to plough and cultivate it, and subsequently shares the earnings from the land. Suppose 5 acres of land generate produce of fruit which earn profit RM10,000 each year, in which case, the individual physical and financial shares on the land are shown in Table 2 below.

Table 2: Inheritance shares and hypothetical share of the physical land

Heirs	Share	8	40	Share/5 acres	Price Received (RM)	Earnings per Season (RM)
Wife	1/8	1	5	0.625 acre	9,375	1,250
First son	Ashabah		14	1.750 acre	26,250	3,500
Second son	Ashabah		14	1.750 acre	26,250	3,500
Daughter	Ashabah		7	0.875 acre	13,125	1,750

By providing earning shares for the sister and mother in the family, this ensures their continuous and active participants in economic activities, plus they would be able to earn the same amount of money from selling the land in less than 8 years with capital land value appreciation. Indeed such outcome is in line with the purpose of *faraid* system which is to help the growth of economic activities, not to retard or reduce the value of the income-generating asset, while ensuring that the land increases in value over time. It would be close to impossible for any of the heirs to acquire similar income-generating properties with the sale proceeds. This essentially implies destruction of capital as none are replaced. Nevertheless, the temptation of greater quantum of money although as a one-off payment can be difficult to resist. In some cases, relocation of people who were occupying the land is necessary, as the land is sold off.

Should the co-owners agree to convert land in order to secure separate titles to their own portion of land, they must be willing to share the necessary administrative costs, including costs of re-surveying, valuation, legal, drawing up detailed plans for planning permission, premium for the new land category, and so on. The premium for conversion is basically payment to the state government for administrative costs and can be seen as a one-off tax on the new land status. It ranges between 15 to 30 per cent of current market value of its new intended use. Private individual sellers are subject to real property gains tax, if they sell the land in less than 6 years. In addition, because of access and sewage land requirements, the sum of land owned by the heirs will be less than the total of land inherited initially.

However, it must be stressed that the informal credit system and the land inheritance system are not flawed in themselves. For instance, the traditional credit system is no different with modern credit mechanisms in the use of land titles as loan collaterals. It is just that small farmers are more vulnerable to unpredictable weather and small profit margins such that their ability to repay loans is severely limited, hence the high rate of default. The problem with the Muslim *fara'idh* inheritance system is not in its principles, but rather in its narrow execution.

A Muslim should exercise his testamentary powers where he can propose a reasonably fair distribution of his or her property in the event of his death and even allocate a maximum of one third of the property to non-heirs or charity. Transfer of assets to prospective heirs during the lifetime of the parent, especially if it concerns indivisible assets, is also encouraged most notably using the instrument of *hibah* and trusts. This can ensure that suitable amount of consultations and payments (if necessary) can be made. In general, proper estate planning is will ensure that no one in the family is left financially deprived after the death of a person. Yet, 'planning for death' is still taboo for most people particularly the older generation, as evidenced by the depressing statistics above.

The foregoing discussions showed how the traditional credit system and inheritance principles became important land transmission mechanisms in the Malaysian context. As long as there is credit default involving land and as long as people are reluctant to adopt estate planning measures, one can expect land fragmentation to increase over the years. Such a situation would promote 'excess surplus' conditions in the area's land market whereby the relatively smaller number of prospective buyers are able to exert their **market power** to push down prices.

III. POLICY RECOMMENDATIONS

At the moment, there is very little visible effort by the states to protect agricultural land hectarage. In the state's pursuit of a broad-based and more resilient economic structure, it appears to be very amenable to expansion of cities as well as the development of new townships and industrial areas in traditionally greenbelt areas, as shown by the apparently 'accommodating' attitude when dealing with agricultural land-use change applications. The market consequently behaves as if approvals are fairly easy to obtain and therefore price farmland largely based on this expectation. Value of farmland with perceptible development potential is typically far higher than a like-to-like parcel with purely agricultural potential. Because location is as important to agriculture as it is to most other economic activities, it is important that the government identify and preserve areas with highest 'use-capacity' in agricultural and relatively lower development pressures, where possible. Better regulations and enforcement space should be explored to ensure optimisation of land resource that would allow agricultural, forestry and other sectors to thrive well side-by-side. Approval of industrial, residential and commercial sites must fit into a larger and longer-term land-use plan. It should not be given haphazardly in order to protect prime agricultural areas from excessive speculation and development demand.

Food production hectarage, particularly in the rice sector which suffered heavily from policy neglect in the past decades, are dwindling due to a multitude of factors: aging farmer, scarce and expensive labour, higher farm input costs, low farm-gate price, poor management and most importantly, small uneconomic sizes. The country has long been a net importer of rice, the country mostly produces only the lower and medium-grade varieties. Despite being the sector with the most number of support measures, these subsidies do not appear to have any effect in making rice farming attractive. Rice subsidies are generally linked to production costs support and incentive e.g. cash subsidies for plowing, fertiliser and machinery expenses,

yield improvement incentive (RM650 for every metric tonne exceeding the previous year's level) and additional price subsidy of RM 248.10 per tonne if the farm output is sold to government-associated rice mills. The current Guaranteed Minimum Price stands at RM 650.00, a rate that is reviewed very rarely. Ultimately, the profit margins to be made from rice-planting are too narrow, particularly for small farmers who do not benefit from economies of scale and particularly because higher costs of production cannot be passed on to consumers. It is possible to conclude that the subsidies are not capitalised into land price (which is expected since they are connected to crop rather than land) or even if they are, the effect is largely offset by the relatively unappealing rates of return.

The National Land Code (1965) have sufficient provisions in Sections (117) and (127) to allow the state to step in as caretaker owner of abandoned land and eventually lease them to more efficient farmers. However, so far the states have been reluctant to exercise their full regulatory powers on land. Of course, sufficient opportunities should be given for more market-based measures as well as greater use of the media to locate absentee landlords and advertise for buyers. Where the problem is more widespread, block compulsory land takings could be initiated to ensure minimal problems with existing built constraints (too many structures or access roads in a unit of land) and ownership conflicts. This is also means that the land area can be reorganised into economic-sized lots of land and sold to interested farmers.

In organised smallholder schemes where equity shares or wages are given to the participants instead of individual land titles, there is very little to tie the farmers to the land. Many hoped that their children would not continue as scheme participants particularly under such arrangements. There is a great deal of provisions in the collective agreements between the original participants and the agency that may not appeal to the second generation; and should therefore be revised to keep up with modern realities. At the end of the day, it may be best to leave the land to fewer but more efficient farmers. More importantly, the present group land schemes need to take a long term view to work out some 'succession' mechanism that is mutually beneficial for both the family and the agency.

Conversion of farmland at the urban fringes continues to be a critical issue for large cities. The apparently diffused pattern of development in Malaysian states is not entirely unintentional. The government embarked on various policies that deliberately aimed to spread development to areas which have been pre-dominantly agricultural and poor in the past. As cities become more congested and land prices rose continuously, consumers are increasingly willing to pay premium prices for low-density development in the suburbs and rural areas. Obviously, to limit speculation on land in traditional agricultural sites, approvals for new township developments must not be allowed or if it is, they should come with the strictest rules tailored to ensure the area's environmental sustainability and overall farming viability (e.g. proper buffer zones are established, rules on land sub-division, zoning and infrastructure additions are set up to ensure there is no conflict with agriculture's dominant place in the local economy). At the same time, government policies on urban renewal must be revised to find ways to restrict development to existing cities and town borders as much as possible. Politicians must discard the 'bigger is better' mentality, and work to formulate policies that encourage more **efficient urban land use** including considering greater

building density, re-development of city brownfields, improving the cities' mass transport network other urban amenities which can enhance quality and comfort of urban dwellers.

As a whole, we strongly believe that the method of **positive planning** whereby state or local authority purchase or alienate land, lay out and service the land with infrastructure prior to selling the ready sites for specific purposes (even that in the form of leaseholds) should prevail over the usual ad hoc use-change approval methods. The recent proposals to pursue separate economic corridors for different economic sectors are in our opinion steps in the right direction. Instead of the focus on spreading development to balance regional growth, the government should encourage **clustering** of similar activities to maximise comparative advantage of the respective areas, promote economies of agglomeration and improve necessary logistics to suit the sector. Specific targets for the agricultural sector have included the setting up of permanent food production parks in each state, improving infrastructure to increase rice's yield/hectare rates in existing granary areas and shift to higher-value agricultural activities such as horticulture, agri-tourism and aquaculture.

We have shown that in some cases, applications to convert agriculture land to development status can in fact be motivated by the **regulatory conditions** themselves. Two examples come to mind. Land legally classified as agricultural cannot be partitioned into plots less than 0.4 hectares. This makes resolution of shared ownership on small inherited lands rather difficult. Agricultural land is also no longer saleable to non-nationals after the country's independence. Although these restrictions are meant to curb further land fragmentation and excessive speculation, respectively, people are able to get around these restrictions simply by applying to have the land status changed to development. In the absence of (or lack of adherence to) a set of comprehensive and longer term land plans, the ad hoc approvals would promote haphazard land-use composition in the particular area. As Coughlin and Keane (1981) argued, even if relatively small portions of land are sold to non-agricultural buyers, land values in the whole affected area will tend to rise, subject to the gap between agricultural and (the perceived) development rents from land.

Regarding the fragmentation of land via the inheritance system, effective and inexpensive ways to resolve **co-ownership issues** without breaking up the land are either (i) still elusive or, (ii) not sufficiently promoted to the masses or (iii) ignored due to lack of political will and enforcement. To be fair, there are already various levels of arbitration avenues available to suit different needs: at the district land office, the courts as well private or semi-private bodies offering consulting services. It is particularly important that these authorities or agencies give priority to solutions that keep the land **intact** (although no doubt this would lead to a host of other issues). The process can be dreadfully cumbersome than it already is if family members are reluctant to cooperate and agree to find quick resolutions to the relevant matters, but is worth pursuing in order to promoting sustainability of agricultural land resources.

IV. CONCLUSION

We argue that consequences from land fragmentation and complex co-ownership structures are partly responsible for the farm abandonment trends within the smallholders sector. Grossly uneconomic farm size (arising from continuous land fragmentation), particularly

those on marginal lands, usually mean very little surplus accumulation for productivity improvements or crop substitution in the future. Wide gaps in yield per unit of land between smallholders and larger agriculturalists underscore the fact that smallholders are particularly vulnerable to shocks in the input and output market, and thus are more likely to abandon their land or sell to the market when adverse margins persist (particularly when alternative income opportunities are now abundant in the new economic sectors). Land that is fragmented in ownership (e.g. if partitioned into smaller plots with single owners each) are seldom viewed favourably for loan financing or further investment purposes. As a result, the market may be saturated with many landowners of small parcels of land willing and eager to sell their land relative to the number of buyers wanting the lands.

It is strongly believed that if policy-makers continue to be lenient and complacent with respect to the various land issues discussed above, there may be little chance of achieving the desired levels success of existing programmes to modernise agriculture and secure higher levels of food security. It is extremely important to address known structural weaknesses in the agricultural sector in order to generate sufficiently attractive conditions for investments in agriculture. If agricultural land fragmentation does indeed contribute to uneconomic land sizes and farm operations, and greater tendency to convert the farmland to other uses (and hence, the subsequent decline of food production capabilities of the country as a whole) as well under-investment in the land, then policy intervention may be called for.

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