

Colonial state formation and patterns of economic development in Java, 1800-1913

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This is not the paper I wanted to write when accepting the invitation for the Venice conference, and I apologize for the fact that I submit a paper which has already been on my website for quite some time. It does present the outlines of the development of GDP and of total factor productivity I am going to talk about at the conference, and suggests a number of explanations for the long-term development of these variables – embedded it in an story about the developing political economy of the colony.

Introduction

During the 19th century Java was one of the most thoroughly colonized societies in the world. The influence of the relatively small number of Dutch administrators, military and merchants present in the colony on the social and economic development of the island was relatively large. This is particularly clear when the different phases in the process of colonial state formation are analysed. The state, which since 1800 was the successor of the Dutch East Indian Company on the island, was almost continually experimenting with new ways of controlling the indigenous population, of levying taxes and of enhancing export production in order to increase the economic basis of the island (and particular of the expatriates and mixed European-Indian population there). In this, it responded to internal and external pressures: it adapted to changes in political realities and ideologies in Europe as well as to changing power relationships within the colony itself.

The argument of this paper is that this process of colonial state formation went, on the one hand, through a number of radically different stages – different experiments in colonial state formation; on the other hand, a few long term trends can be discerned: gradually the administrative capabilities of the colonial state increased, which increased the grip the state had on economy and society and made it easier, for example, to increase taxation and export production. Also the gradual integration of world markets and falling transport and

transactions costs – a process that accelerated between 1850 and 1870 – meant that Dutch (and other foreign) entrepreneurs became more responsive to new economic opportunities in the colony, which (when colonial policies favored free enterprise) also contributed to the expansion of export production.

The main goal of the paper is to analyse the different experiments in colonial state formation that were carried out between 1800 and 1913; it is attempted to determine the causes of the shifts in policy that can be discerned at about 1808, 1830, 1850 and 1870, and to study their effects on the economic development of the island. I intend to show that colonialism was not a static relationship between a metropolis and a colony, but was characterized by dynamic adaptation to developing power balances within the colony and between colony and colonizing nation. Furthermore, these changes had a large impact on Javanese society and economy, different stages of colonial policies having radically different consequences for levels of employment and income. This paper reviews these different stages of colonial policy, and tries to understand what their consequences were. It can build on a large contemporary colonial and economic-historical literature. In fact, since the early 1800s colonial experts have been discussing about these issues. During the 20th century social scientists - anthropologists such as Clifford Geertz and economists such as J.H. Boeke - have participated in this debate (the best recent overview is Booth 1998).

One of the new elements of this paper is that the analysis of Javanese economic development can now be based on a project measuring the growth of GDP and its components between 1815 to 1913.¹ This systematic database makes it possible to evaluate the outcomes of different stages of state formation more in detail – in spite (I think) of the relatively large degrees of error involved in any such attempt to quantify economic growth in the 19th century.

The structure of the paper is as follows. First I will briefly discuss the (quite complex) societal structure of Java at the beginning of the 19th century. Next the different stages of colonial policy will be outlined, from the reforms of the 1808-1826 period to the ethical policies of the early 1900s. The discussion of each period will focus on the political economy of the policies concerned (who profits from them, what drives the policy switch) and on their consequences for the growth and structure of GDP. In the conclusion I will return to the issue of colonial

¹ For a discussion of these estimates, which will not be presented in this paper, see Van Zanden 2002

state formation at a more theoretical level, and attempt to draw some conclusions from the Javanese case.

Java in 1800

Javanese society at the beginning of the 19th century was complex. In fact, three types of society coexisted on the island: indigenous Javanese social structures, the colonial nexus of the former VOC (essentially consisting of the descendants of VOC-servants and some independent merchants), and a 'comprador' group consisting of Chinese, Arab and Indian merchants, with yet other type(s) of social structure(s). The interaction between these three groups explains much of the dynamics of Javanese colonial society and economy in the 19th century. Therefore, a rough sketch of the three socio-political structures is fundamental for understanding the rest of the story.

It has been argued – by Burger (1975) in his classic study of Indonesian socio-economic history, and more recently by Talens (1999) – that the basic structure of Javanese society was feudal. This concept can probably still be used when defined appropriately (as done by Talens, who follows recent debates on this concept by in particular Berkta). The following features may be called characteristic for a feudal society:

- it is largely agricultural and non-monetarized, the majority of the population consists of peasants who are, however, part of a (more or less) centralized state governed by an elite which draws its surplus mainly from the agricultural sector;
- this surplus is extracted using non-economic means, i.e. through labour services and claims to part of the produce of the land
- the claims to (the produce of) labour and land of the different layers of society are overlapping: often the sovereign claims to be the sole owner of the land, but peasants have strong user-rights (and claims to certain property-rights as well, for example as reclaimants of the land), and intermediate layers – the village elite, local and regional elites – have additional claims to labour services and a share in the agricultural produce
- contracts are oral and (therefore) to some extent multi-interpretable, and without the formal and 'permanent' implications of written contracts drawn up according to (Roman/European) law

An important characteristic of this system is that it is highly flexible. Feudal states are characterized by constant switches in the relative powers of the different layers of society. At some point in time the central authority may be quite strong, for example because a very competent king is in charge of the state. At other times - after a war, or an epidemic - peasants may have a relatively strong bargaining position and central authority may be weak. At yet

other moments regional elites may be relatively effective and powerful. Because of the overlapping claims to land and labour and the flexibility of oral contracts, social relations and the distribution of the surplus can easily adjust to these swings in relative power positions because no new definitions of property rights are necessary. Socio-political structures and the distribution of the surplus can therefore adapt to changes in the power equilibrium. But it is also clear that (if we accept Douglass North's version of institutional economics) these 'fuzzy' property rights are probably not very conducive to market exchange. Peasants, in particular in the regions close to the centre of the feudal state in mid-Java (near Yoyga and Solo) had no clear property rights. They could probably claim the right to use land that they had reclaimed themselves for 3 or 5 years or, in other cases, one generation, but afterwards the *sawah* became part of the land that was controlled by the village community and redistributed at certain intervals. Hence they could not use their land as collateral for a loan and could not sell or buy it, although at the village level some 'informal' exchange of land did occur. During the first half of the 19th century the colonial state also favoured the system of periodic distribution of the land, because it hoped to stabilize peasant society in this way and broaden the basis from which labour services could be levied (see Breman 1980).

Already in the 17th and 18th century the VOC learned how to use this 'feudal' system of surplus extraction for its own purposes. It shows the flexibility of this system that the VOC – being a foreign 'capitalistic' trading body – could successfully graft itself onto these feudal structures (see Talens 1999; Nagtegaal 1996). Profiting from periodic crisis in the feudal states it dealt with, it concluded formal treaties with the sultans ruling those states, in particular with mighty Mataram, the central state that controlled much of Java in the 17th century, but also with the sultanate of Banten and some lesser powers. These treaties gave the company 'sovereign' rights in increasingly large parts of the island and the privileges that were attached to them, i.e. a claim to a share of the produce of the land, to labour services, the right to levy taxes etc. The highly successful coffee cultivation of Priangan (in the western part of Java) was developed in this way; being based on the forced cultivation of the crop by the peasants of the region in return for a quite basic monetary compensation. To 'oil' the machine, also members of the local elite profited from these compensations. During the 18th century the seductions of the feudal regime had changed the orientation of the VOC on Java fundamentally: it increasingly became a territorial state – which was still confined to the north and western part of the island – profiting from sources of income that were basically attached to the land, to export produce from the land, and to the taxes it levied on trade. Trade itself as a source of income declined in relative importance. By and large it left indigenous social

structures intact, and only tended to add a few colonial administrators and advisors to their upper-layers. Visitors to the island in the late 1700s saw a colonial elite – of mixed Dutch-Javanese descent – which took over many of the customs and privileges of the indigenous elite (and in the long run might have merged into ‘feudal society’ almost completely).

This coexistence of a Dutch colonial nexus and an indigenous feudal society was made possible by the intermediate role played by merchants from China, India and the Arab world. In particular Chinese merchants – who enjoyed a large degree of self-government in the cities on the north coast – played a crucial role as tax farmers, middlemen and entrepreneurs, but also as skilled labourers in many branches of industry (shipbuilding, metal working etc.) (Blussé 1986). They dominated the sugar industry and the retail trade of the island (except for those parts where they were not permitted to enter) and were a major force in wholesale trade, on the informal capital market. Both the VOC and the emerging colonial state were highly dependent on cooperation with the Chinese, but the state also used its power to cream off part of the surplus the Chinese acquired as a result of their activities. Tax farming was a key instrument in this process: the state leased the farming of the most important taxes – in particular the opium tax – to competing groups/families of Chinese, who often could only acquire access to a certain region by renting these taxes because the state restricted access to the Javanese countryside (Rush 1990). The deal was, then, that these families acquired a near-monopoly in a certain part of Java, in return for a favourable (and perhaps in view of its intrinsic value often too high) bid for the opium tax, which also gave access to the other taxes that were farmed out. Some of the taxes that were levied were also quite detrimental for market exchange: levies at *pasars* (markets), at toll-gates, and the monopoly on pawn houses that was also farmed out, led to many abuses which increased costs of peasants accessing markets (see Van Zanden in press).

In another paper I have argued that this set of institutions and social-political structures resulted in poor conditions for market exchange (i.e. high transaction costs), as is clear from the existence of highly volatile, non-transparent markets and the extremely high interest rates on capital markets (Van Zanden in press). Incentives for market exchange were poor, and levels of market production and specialization were relatively low. This feature of Javanese economy would set severe constraints on the attempts to change its structure during the 19th century.

1808-1826: Reforms and their failure

The first quarter of the 19th century were a period of reform and experimentation aimed at the creation of a more or less ‘modern’ colonial state. Three stages can be discerned: the first phase were reforms initiated by the new Governor-General Daendels in 1808-1811. Between 1811 and 1816 the British (in particular lieutenant Governor-General Raffles) controlled the colony and introduced their own ideas and practices. Thirdly, between 1816 and 1826 the Dutch resumed their attempts, now led by G-G Van der Capellen, was to introduce the concept of an ‘enlightened’ state into Java. Ideologically these reforms can be traced back to discussions between enlightened colonial experts about the future of the colony that started in the 1780s. The discussion intensified when the VOC was liquidated and the Dutch state (which was also reorganized at the same time - with the help of French revolutionary forces) took over its possessions in 1800. The new state the reformers had in mind – their model, inspired by Enlightenment thought was to some extent the post 1792 French state - was highly centralized, knew only, in principle equal, citizens and therefore abolished all feudal privileges, and had a well-defined mission: it saw itself as an instrument of progress, aiming at the improvement of economy and the society at large, enhancing infrastructure, education, industry and agriculture.

The newly appointed G-G Deandels was most directly inspired by French revolutionary ideals. One of his aims was to create a modern, formal (Weberian) bureaucracy, because under the old regime servants of the VOC were often also merchants and therefore guarded their own mercantile interests quite closely (in fact the fundamental difference between the private and the public sphere was blurred during the VOC period, as the VOC was and the governing body and a private trading company at the same time). He also forcefully suppressed the (symbols of) feudal privilege – in way that was difficult to understand by indigenous elites – and abolished some of the labour services and forced deliveries of export products (of cotton yarn for example). His other claim to fame was that he designed and constructed the *Grote Postweg*, a ‘modern’ road that connected the major cities on the north coast of the island. Paradoxically, he could only do this by using extremely large amounts of labour services. At the same time he introduced, in order to finance the colonial state, the coerced cultivation of coffee, which had been successful in the west, Priangan, in other parts of Java the Dutch controlled (Stevens 1982: 30 ff).

During the British interregnum similar policies were pursued. The key reform introduced by Raffles was the land rent, which had to replace all forced deliveries and other feudal duties. The juridical basis of the land rent was the claim – laid down in previous treaties between the VOC and Mataram – that the colonial government being the successor of feudal sovereigns such as the sultans of Mataram, was the owner of all land. All peasants therefore could be considered to be lessors of the land of the state, for which they were obliged to pay a certain amount of money – on an individual basis, and dependent on the quality of the land – of one-quarter to half of its yield. Perhaps paradoxically, this feudal claim to part of the produce was the basis for the introduction of a relatively modern land tax. In one stroke other feudal dues were officially cancelled, and as the tax had formally to be paid in cash, peasants were induced to sell a part of their crop to the market in order to pay their land rent (or – but this was considered a less desirable option – pay the land rent in rice). In a way it was an attempt to introduce a modern market-oriented economy at one stroke. Yet again Raffles could not do without the old structures of social control: in order to collect the land rent, local elites had to be involved. Taxation on an individual basis remained a fiction, and became to a large extent subject to the discretionary power of local elites. Moreover, the successful system of forced deliveries of coffee in Priangan remained untouched. At the same time Raffles was forced to sell large stretches of land – including the villages that lay on them and their inhabitants – to private entrepreneurs who received almost unrestricted ‘feudal’ privileges on these ‘private estates’, such as including the right to tax the inhabitants and to use their labour on sugar plantations (Bastin 1954).

Van der Capellen’s policies were to some extent again a continuation of the reforms implemented during the previous period. One of the modern features of the new administration was the systematic collection of statistical data on almost all aspects of the economy and society of the island – with a focus on tax-related topics – which still forms the basis of much of our understanding of its economic and social structures (Stevens 1982: 72-94). A new generation of civil servants, some of whom already had accompanied Deandels to Java in 1808, now took over the administration of the island – some of them inspired by developmental ideas - and began to collect information about the society they governed and ‘served’. Policies implemented between 1816 and 1826 were to some extent inspired by liberal ideals, but at the same time Van der Capellen was reluctant to fully unleash the forces of the market; the protection of the Javanese population against dispossession by Western entrepreneurs or Chinese merchants was also an important policy objective. He was very critical of the situation on the ‘private estates’, where the rights of peasants were often

ignored. At the same time he introduced market-incentives into the system of coerced coffee cultivation (still the cork on which much of the export economy floated) by linking the price paid to the cultivator to the world market price – before 1817 such a link did not exist. In this way he hoped to slowly transfer the system into one of private and voluntary cultivation (Stevens 1982: 147-9). The government also introduced the rule that contracts about the sale of agricultural products could not be concluded anymore with the heads of villages (which had been the rule so far) but had to involve the peasants themselves. The idea was to weaken the position of the local elite and expose the peasants to some extent to the free market, but this reform remained a dead letter.

The reforms between 1808 and 1826 were successful in one respect: a centralized state built on a newly created ‘modern’ bureaucracy – which started to expand its influence into the arteries of Javanese society – was created in less than two decades of colonial reform. This was quite an achievement. This new bureaucracy in theory also embraced the indigenous elite; officially the ‘nobility’ (*priyayi*) of the island were reduced to office holders serving the interests of the new colonial state (Sutherland 1979: 7). Daendels in particular had quite forcefully acted against their feudal privileges, and Raffles and Van der Capellen followed in his footsteps (although often with more diplomatic skills than Daendels had possessed). The attempts to end ‘feudal exploitation’ by the indigenous elite had been the core of much of the reforms, which had given rise to constant frictions between the *priyayi* and the Dutch administrators.

Moreover, these attempts to reform were compromised by the necessity to pay for the – strongly expanding and therefore increasingly costly - state. Java was considered to be a *wingewest*, which was supposed to yield profit to the ‘mother country’, both in terms of trade flows (which had been monopolized by the VOC, but were now liberalized and increasingly dominated by British merchants) and in terms of net income flowing to the Dutch treasury. One of the problems were the costs of the new bureaucracy: the expenditure of the colonial state grew very rapidly from about 15 million guilders in 1817 to 27 million guilders in 1824. Income from taxes went up as well, in particular because of the introduction of new taxes in large parts of the island, but the gap between expenditure and income hardly narrowed. Consequently the state ran into debts. The unfavourable development of coffee prices during these years also contributed to these problems; as a result the policy to liberalize the coffee cultivation was also abandoned as margins for the colonial state on this export crop became too small (Stevens 1982: 95 ff). Low export prices meant that export production stagnated as

well and that private capital inflows from the Netherlands into the export sector were insignificant.

In the second half of the 1820s these problems triggered a crisis. The tension between the colonial state and the indigenous elites resulted in the Java War, a massive rebellion against Dutch rule that broke out in 1825. It had a number of causes: the humiliations suffered by the Javanese elite since the days of Daendels was perhaps most important; the increased exploitation of Javanese peasants by Chinese merchants acting as tax farmers for the colonial state also added to the vehemence of the revolt (of which – as so often – Chinese became the first victims) (Carey 1975). The Dutch escaped narrowly from being defeated by the Diponegoro, the charismatic leader of the rebellion who was closely related to the court in Yogyakarta. The costs of suppressing the revolt were massive and contributed to the already alarming growth of the budget deficit. The first impulse by William I, the Dutch King, was to cut the ordinary budget dramatically (De Prins 2002). In particular all kinds of ‘modernizing’ expenditure (on infrastructure, agriculture etc.) were reduced drastically, in this way also giving up some of the more progressive ideals of Van der Capellen. It seemed that the attempts to reform Java in a liberal way had failed; a new approach was necessary.

1830-1870: the Cultivation System

This new approach was formulated by Van den Bosch. In a memo that was submitted to King William I in 1829 he argued that – because of its distant location, the resulting high transportation costs and the relatively high costs of producing coffee and sugar in Java – the island could not compete with other (Caribbean) colonies on European markets. Moreover, Javanese peasants, because of the richness of their soils and the high yields of rice cultivation, could produce their own subsistence in only a fraction of their labour time; he in fact assumed that 120 days of labour were sufficient for the feeding of a family (Van den Bosch 1829: 304). The high productivity of rice cultivation also meant that the incentive to switch to coffee (or sugar) was absent (Van den Bosch 1829: 305, 13).² The only way to stimulate export agriculture was to use the ‘surplus’ of labour time of the peasants and coerce them to grow the

² Van den Bosch 1829: 313: “trouwens, zolang de Javaan met meer voordeel rijst dan andere producten verbouwen kan, zal hij in zijn belang wel geene aansporing vinden, om zich op die andere kultures toe te leggen”; “as long as the Javanese grow rice with much more profit than other crops, they will not be stimulated to cultivate those other crops”

crops that were demanded by European markets. This, of course, had been the traditional system of export agriculture adopted by the VOC.³

Although one can doubt the reliability of a lot of the statistics he used, his analysis seemed to explain why European capital and entrepreneurship were unable to develop the island (an option put forward by some reformers of the 1820s), and why at the same time also the Javanese peasants were unwilling to expand market production of cash crops.⁴ Most importantly, he convinced the King that such a switch in policy was necessary, who appointed him Governor General in 1830. In the next few years Van den Bosch introduced the new system he has envisaged, now (in)famously known as the Cultivation System.

The Cultivation System – its origins, functioning and the long term impact it had on Javanese economy and society - is one of the classic topics of the (economic) history of Java. There is consensus that the system worked quite well (initially) because the early 1830s were a major turning point in export production. Exports of sugar and coffee (and indigo) went up dramatically: coffee output from 20,000 tons in 1829 to 64,000 tons in 1839, and sugar output from 6,700 tons in 1831 to 58,000 tons in 1840. This was to a large extent planned by the colonial state; the Cultivation System therefore had some of the features of a planned economy. The central government allocated to the different residencies targets for the cultivation of coffee (or for the planting of new coffee trees), sugar and indigo (and a few less important crops), which were translated into targets per district and per village. Prices hardly played a role at all. Van den Bosch had already shown that export production could not take place at competitive world market prices, so the price mechanisms was largely discarded. He expected – to give an example – quite a lot of the cultivation of indigo, in spite of the fact that peasants and administrators lacked experience with the crop, that expertise about its processing was minimal, and that nobody knew what the long term consequences of growing indigo on *sawahs* were for the agricultural system and the fertility of the land. The same applied to sugar, which was also introduced in regions in which no expertise with this crop existed and in which the soil was not particularly suited for growing sugar cane (but nobody yet understood this). Peasants received a certain reward for planting the new crops – the *plantloon* – that they could use to pay the land rent. They also had to supply labour services to bring the crops to the warehouses of the state, for the construction of new roads to solve

³ He also made the point that in Europe this kind of ‘coercion’ of the labour force was the result of the fact that capital was concentrated in the hands of few (p. 316) and argued that the kind of coercion he wanted to (re)introduce in Java was basically similar

⁴ His estimates of the daily wage of an agricultural labourer – 6 to 7 stivers – were much too high; in reality this was only 2 to 3 stivers, which has important consequences for his estimates of cost prices of Javanese cash crops.

infrastructural constraints, for the processing of the sugar crop in the sugar factories etc. etc. Monetary compensations for these labour services were extremely low if it existed at all (see for example Elson 1994 and Fasseur 1975).

Yet, amazingly, the system seemed to work quite well during the first decade, when export production grew rapidly. Its initial success was the result of a number of factors. Firstly, the colonial state recruited the cooperation of local and regional elites (village heads and 'higher' members of the *priyayi* class) by incorporating them into the system: they became intermediaries in the 'new' lines of communication, which strengthened their position again, and some of their former privileges were restored. An important issue was, for example, the hereditary nature of their positions. Whereas Daendels had abolished this, and made appointments (in theory) dependent on individual capabilities, this privilege was now restored. Similarly their claims to a share of the sawahs were acknowledged (Sutherland 1979: 12). This was a radical departure from the policies that had been pursued between 1808 and 1826, which had been directed at loosening the grip of the *priyayi* on the peasant population. Moreover, they received a share of the proceeds of the export crops (*kultuurprocenten*), which gave them a strong incentive to cooperate with the new policies. In the regions where the Cultivation System was most successful, *regenten* became extremely rich and powerful as a result. The Dutch civil servants also received a share of these *kultuurprocenten*, which formed a break with the policies since 1808 aimed at creating an independent bureaucracy; in this respect too the two structures of social control converged. Consequently, tensions resulting from the 'modernization from above' between 1808-1826 disappeared – perhaps also because the Java War had shown that the Dutch were too powerful to defy again successfully.

Not only local elites were incorporated into the new system. Chinese merchants also played a large role, in particular in sugar processing, where they supplied much of the new entrepreneurship and expertise for the first phase of expansion. Again the first contracts concluded between the colonial state and these Chinese sugar entrepreneurs almost completely ignored the market: the state gave them credit to establish new factories, an almost unlimited supply of coerced labour from surrounding villages, guaranteed that peasants would grow sugar cane on (the best) fields close to the factory, and made sure that the sugar would be bought by the colonial state for a guaranteed price (Fasseur 1975: 65). Once it became clear how profitable these contracts were, European merchants invaded the sugar industry, and used their political leverage to acquire similar advantageous conditions.

The initial success of the Cultivation System can therefore to some extent be explained by the fact that it reconciled the interests of the three (commercial and political) elites of the island – the colonial state/bureaucracy, the Javanese elite and the Chinese merchants. This reconciliation went even deeper: the separate identity and structure of the indigenous elite, which had not been acknowledged by the reformers between 1808 and 1826 (when it was attempted, unsuccessfully, to turn them into modern administrators), now became part of the formal structure of the administration of the island. In fact, the new structure that arose meant that two separate ‘bureaucracies’ co-existed: the formal administration by Dutch-born civil servants, and the ‘indigenous’ socio-political structures of Javanese society (with their emphasis, for example, on gift-giving, on patron-client relationships, the importance of kinship and family etc.). The highest Dutch administrator in a certain residency was considered to be the ‘youngest brother’ (i.e. his intimate advisor) of the local regent, acknowledging both the particular sphere of influence of the latter, and the important advisory role that had to be played by the former. This merger of two separate (and in theory quite different) systems of social control, became one of the particular features of Javanese society during the 19th century. It was a source of perhaps remarkable stability, but also a source of tensions between ambitious civil servants of the Weberian type (who took this part of their role seriously) and members of the *priyayi* class who stuck to their privileges.

An additional reason why the system functioned well initially was that the government was spending large amounts of money – mainly *plantloon* - in return for the export crops. There existed a large, unsatisfied demand for small copper coins – *doits* – for small exchange on the island, and by applying new industrial techniques in the Netherlands the colonial authorities managed to produce huge amounts of cheap *doits* that could be used to pay the *plantloon*. The circulation of money increased strongly, which probably lessened monetary constraints in the countryside, which had always been short of cash (Elson 1994: 261-4). At the same time labour demands on peasant households increased strongly, because of the forced cultivation of the new crops and the extension and intensification of labour services. Part of the money they received was used to buy cheap cotton textiles, which were brought to the island in increasingly large quantities and at rapidly falling prices, which were lower than those of home-produced textiles. What happened in fact was that the Javanese textile industry, which was still thriving during the early 1830s, suddenly contracted due to this ‘import invasion’ and the increased demand for labour from export agriculture (Elson 1994: 272 ff).

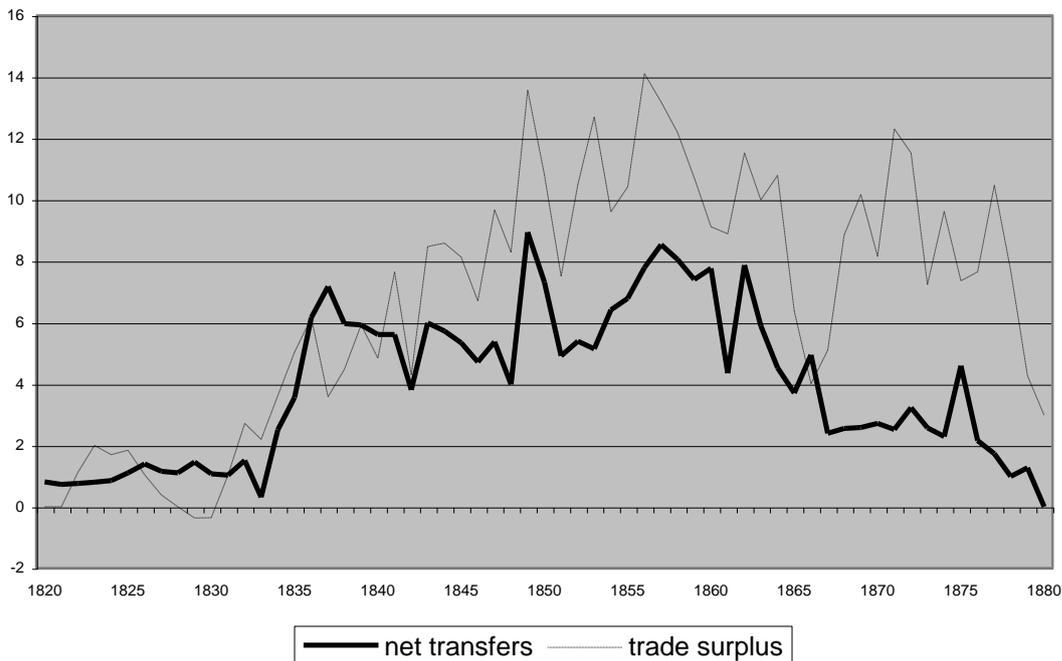
As mentioned before, it is still a matter of debate what exactly happened during these years, and how the Cultivation System affected the long-term trajectory of Javanese society

and economy (see Elson 1994: 301-22; Booth 1998: 93-95). Export production went up enormously, but at a high cost. Moreover, the 'prosperity' of the 1830s was followed by the famines of the 1840s – part of the debate concerns the link between these two.

A few studies have assumed that GDP per capita increased during these years, arguing basically that the enormous increase of export earnings from cash crops must have had a favourable impact on economic welfare (Maddison 1989; see also Booth 1998: 15-9). This straightforward interpretation overlooks however the decline of textile production. Moreover, when we move from GDP per capita to a more appropriate measure of welfare, e.g. consumption per capita, it should also be taken into account that the level of investment during the Cultivation System also went up substantially and that a large share of its proceeds were skimmed off by the Dutch state. This took the form of the 'batig slot', the surplus on the colonial budget that was transferred to the Netherlands. The detailed study of the development of GDP and its components on which this paper is based – it is in fact the first systematic attempt to measure these changes within the framework of the system of national accounts – therefore leads to a different picture.

This can be summarized as follows: exports of coffee and sugar went up very fast, but a large part of the profits of the export expansion were skimmed off by the colonial state, and in its turn by the Dutch state. The actual sale of the crops took place in the Netherlands, which therefore received the money that was involved – in return the colony got its *doits*, but the difference between the two sums was increasingly large. Two sets of estimates of the size of this colonial drain are presented in figure 1.

Figure 1 Two estimates of the colonial drain, 1820-1880 (as a percentage of the GDP of Java)



Sources: *Changing Economy in Indonesia*, 2 (Public Finance) and 7 (Balance of Payments); GDP-estimates from Van Zanden 2002.

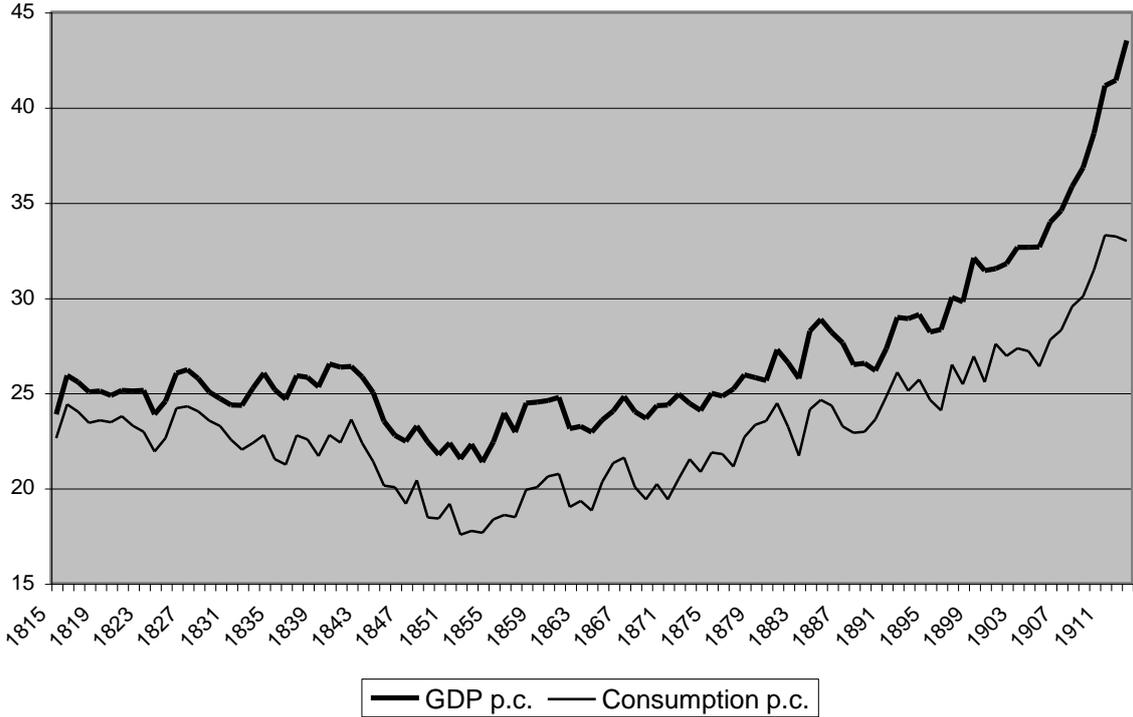
The figures of ‘direct transfers’ probably underestimate the true drain on the colony, whereas the gap between exports and imports is perhaps an exaggeration of its size.⁵ In combination they show a dramatic degree of colonial exploitation, growing from close to zero in the 1820s to perhaps as much as 8 to 12 percent of Javanese GDP in the 1850s. Then follows a decline as a result of gradual reforms during the 1860s and 1870s. In terms of the GDP of the Netherlands the figures are also quite impressive. During the 1850s, when the system functioned most efficiently, the *batig slot* contributed on average 3.8 percent to Dutch GDP annually, and the income from Java contributed more than one-third of the budget of the Dutch state (Van Zanden and Van Riel 2000: 223). It would be difficult to find a similar, extremely ‘successful’ example of colonial exploitation.

The story of economic growth is different. GDP grew rather rapidly during the 1830s, but stagnated during the 1840s (in particular between 1842 and 1854), and GDP per capita fell

⁵ The reasons why the official figures of net transfers are underestimates are discussed in Van Zanden and Van Riel 2000: 222-4; Van der Eng 1993b argues that the deficit on the merchandise account exaggerates the size of the colonial drain.

by almost 10% during this second stage of the Cultivation System (Figure 2). Bad harvests in the mid 1840s and again in 1849/50 were part of the story, but the reasons for the deceleration of growth in this decade were much more complex. Consumption per capita fell even more in those years (Figure 2), because the colonial drain continued to increase, and investments as a share of GDP were much higher than before 1830 (they increased from about 5% in the 1820s to 8 to 10% in the 1830s and early 1840s). At the same time the structure of the economy changed substantially: the share of textiles in GDP fell from about 15% in the 1820s to 6-7% in the early 1850s; this was the result of a very slow growth of output (in particular of its finishing stage, the *batik* production) in combination with a sharp fall of relative prices. The share of export agriculture in GDP increased from about 4% in the 1820s to more than 12% in the early 1850s.

Figure 2 GDP per capita and consumption per capita, 1815-1913 (in prices of 1913)

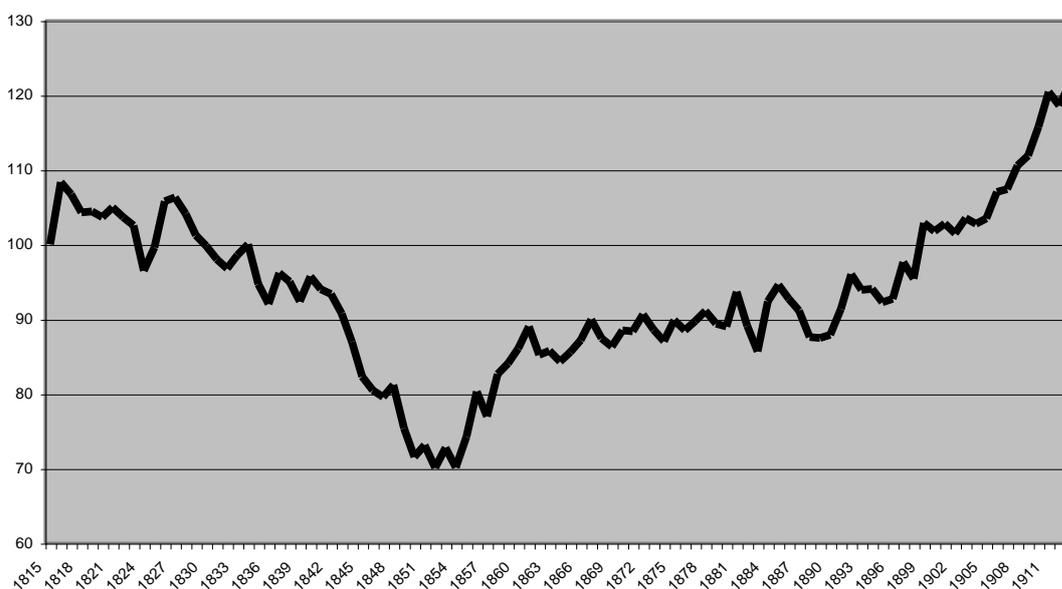


Source: Van Zanden 2002.

The GDP series, in combination with sets of estimates of labour force and capital stock, make it possible to estimate the long term development of total factor productivity. Figure 3 presents a striking result of this experiment, showing that total factor productivity

declined almost continually during the 1830s and 1840s. Moreover, there are reasons to assume that this still underestimates the decline: labour input per capita probably increased strongly during the first stages of the Cultivation System meaning that total factor productivity must have fallen even more (Boomgaard 1987 presents tentative estimates of the increase of labour input per capita during the first phase of the Cultivation System). This extreme fall in total factor productivity points to a strong increase of inefficiency in the new export sector created in these years, the result of the misallocation of resources on a vast scale. This is exactly what civil servants who began to criticize the system in the 1840s argued: the indigo cultivation, for example, did not produce net profits to the state, needed extremely large amounts of labour and had negative consequences for the fertility of the soil. Similarly, the first generations of sugar contracts were so poorly designed that very inefficient forms of sugar cultivation and processing in regions that were unsuitable for this crop occurred. The seduction to use large amounts of seemingly unlimited *corv e* labour also meant that much labour were wasted, etc. etc (Fasseur 1975). In sum, this ‘planned’ economy lacked the incentives to be efficient; capital, land and labour were wasted on a large scale, at the expense of the Javanese.

Figure 3 Estimates of the development of total factor productivity and of consumption per capita, 1815-1913 (1815=100)



Source: Van Zanden 2002, and additional yet unpublished estimates of capital stock and labour input by author.

What happened from the late 1840s onwards was that these criticisms led to certain adaptations and reforms to allow price signals to do their work and increase efficiency. The ultimate goal was to increase the net benefits to the state because colonial administrators acknowledged that the system was not sustainable in its initial ‘crude’ form (Fasseur 1975: 43ff). These gradual reforms were also stimulated by changes in the political situation in the Netherlands, where liberal reformers took over the state – most decisively in 1848 – and voices that pleaded for reform of the Cultivation System entered the political arena.

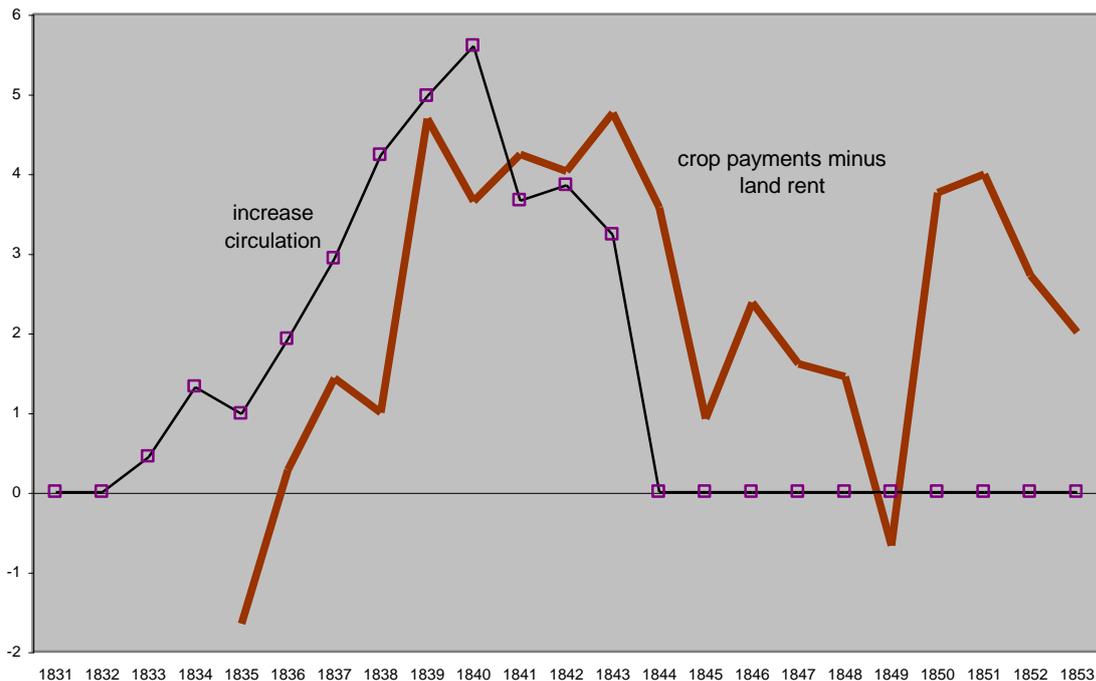
Initially then, during the 1830s, the Cultivation System may have had some favourable effects on the living standards of the Javanese population (Elson 1994: 307ff; Van Zanden in press). But the tables turned after 1840. A number of developments explain this change. After the long boom of the second half of the 1830s the early 1840s were a turning point in the international business cycle, characterized by overstocking (of textiles, for example), depressed prices, and a general lack in demand.

To the problems of a downturn in the international business cycle should be added the fact that the monetary policies of the colonial state resulted in a break down of the monetary system of the colony (Van Laanen 1980; De Bree 1928). During the 1830s large amounts of doits had been used to finance the new system, but the colonial government, believing that the demand for doits was extremely elastic, continued to issue these small coins even after their relative price was going down (whereas silver coins – following Gresham’s insights – had almost disappeared from circulation). In the early 1840s they became convinced that this course of action led to monetary chaos, which led to renewed attempts to cut spending on the island and to increase the return flow of money into the colonial treasury by increasing the land rent. Figure 4 brings together two indices of the monetary flows between the state and the Javanese population: one is the increase in the circulation of doits, the other the difference between the *plantloon* paid out and the land rent received by the treasury. They both show that much new money was pumped into the Javanese economy during the 1830s, but that this changed radically in the 1840s. It is therefore no coincidence that the two troughs in the latter series coincide with the two major famines that occurred in Java in these years (in 1844/46 and 1849/50).⁶ Detailed case-studies of those famines show that the lack of purchasing power (‘entitlements’) was probably the most important cause of both of them (see Elson 1985;

⁶ Boomgaard 2002 by stressing the external (weather-related) causes of the harvest failures of the 1840s appears to ignore the economic and socio-political circumstances which made these harvest-failures into large-scale famines; it is striking that similar famines did not occur anymore on Java during the rest of the 19th century.

Hugenholtz 1986). In the background of all this was the growing inefficiency of the economy of Java in those years, evident from the estimates of total factor productivity. After generating some, in fact non-sustainable growth in the 1830s, the system led to the economic (and demographic) setbacks of the 1840s.⁷

Figure 4 The increase in the circulation of copper coins and the balance of crop payments minus land rent in Java (in million guilders)



Source: *Changing Economy in Indonesia* vol. 6, table 1, vol. 14, table A21.

During the (late 1840s and) 1850s the reforms were directed at streamlining the Cultivation System and at improving the functioning of markets. Examples are:

- the abolishment of the most inefficient cultures, in particular indigo, and the streamlining of the contracts with sugar factories;
- the abolishment of the *pasarpacht* in 1851, a tax on local markets which hindered local trade

⁷ This assessment of the consequences of the Cultivation System is rather pessimistic and critical of the optimistic assessment by Elson (1994);

- the reform of the monetary system – a.o. the introduction of new (small) silver coins and the intimate linking of the Dutch Indies guilder to the Dutch guilder, which stabilized the currency
- the increase of the part of the export crops that were sold in Java itself and the re-establishing of markets in these products resulting in the re-introduction of price signals
- corvee labour was slowly replaced by free wage labour; experiments in the late 1840s already showed that free wage labour was much more efficient (produced at least two times as much per day as corvee labour).

During the second half of the 1860s the abolishment of the system and its replacement by a liberal economic order became the focus of reform:

- a movement began to gradually abolish all forms of coerced labour, and replace them by free wage labour – a transition that was completed towards the end of the century;
- sugar production was now gradually transformed into an industry based on (more or less) free contracts with villages and peasants, and coffee cultivation, which continued to be based on coercion, became less and less important within the agricultural economy of Java
- new forms of export cultivation (a.o. tea and tobacco) were developed, using European capital and entrepreneurship; the Agrarian Law of 1870 made it possible for Europeans to rent land (that was not used by the indigenous population) from the colonial state for a period of up to 75 years, with the aim to set up a plantation there;
- the colonial bureaucracy was reformed in weberian style, the *kultuurprocenten* were abolished and salaries were again based on formal rules and hierarchies (Fasseur 1975).

Another important change that stimulated market exchange was the construction of a network of railways, from the mid-1860s onwards, firstly by private enterprise backed up by the colonial state, from the 1870s onwards increasingly by the colonial state itself.

The effect of these changes was to a return of productivity and GDP per capita to its pre 1830 level, and, after 1860, a gradual decline of the level of exploitation of the Javanese economy by the (colonial and Dutch) state.

From liberalism to ethical policies.

During the 1860s and 1870s a new colonial regime came into existence, in which private entrepreneurs – mostly of Dutch origin – who ran large plantations and sugar plants using ‘free’ wage labour and ‘free’ land became the core of the export agriculture of Java. Export agriculture remained the most important economic basis of the colonial regime. There is some evidence that – in spite of the rhetoric that labour and land markets were supposed to become ‘free’ – old mechanisms for the recruitment of labour and land continued to play a role. The sugar industry, for example, used the power of village heads to regularly redistribute *sawahs* to claim ‘their’ share of the land for the growing of sugar cane (Breman 1983: pp 24-5). This also meant that there were limits to the conversion of village-owned land into private property in those regions in which the sugar industry remained predominant. Coffee remained a crop of which the cultivation was based on forced labour and the income from these forced deliveries remained important to the colonial treasury, but due to a number of developments (a coffee disease, and the gradual disappearance of the up-land frontier where coffee trees were grown in predominantly ‘virgin’ land) its importance declined slowly. Similarly, wage labour in parts of Java continued to contain elements of coercion, although from the 1880s onwards the free labour market became increasingly important. Again environmental and agricultural changes played a role here: until the third quarter of the 19th century Java was still a kind of frontier society, where land was relatively abundant (and the organization of export agriculture required the binding of labour to the land). After about 1880 the frontier became closed, which also resulted in an increased supply of wage labourers (Aass 1980).

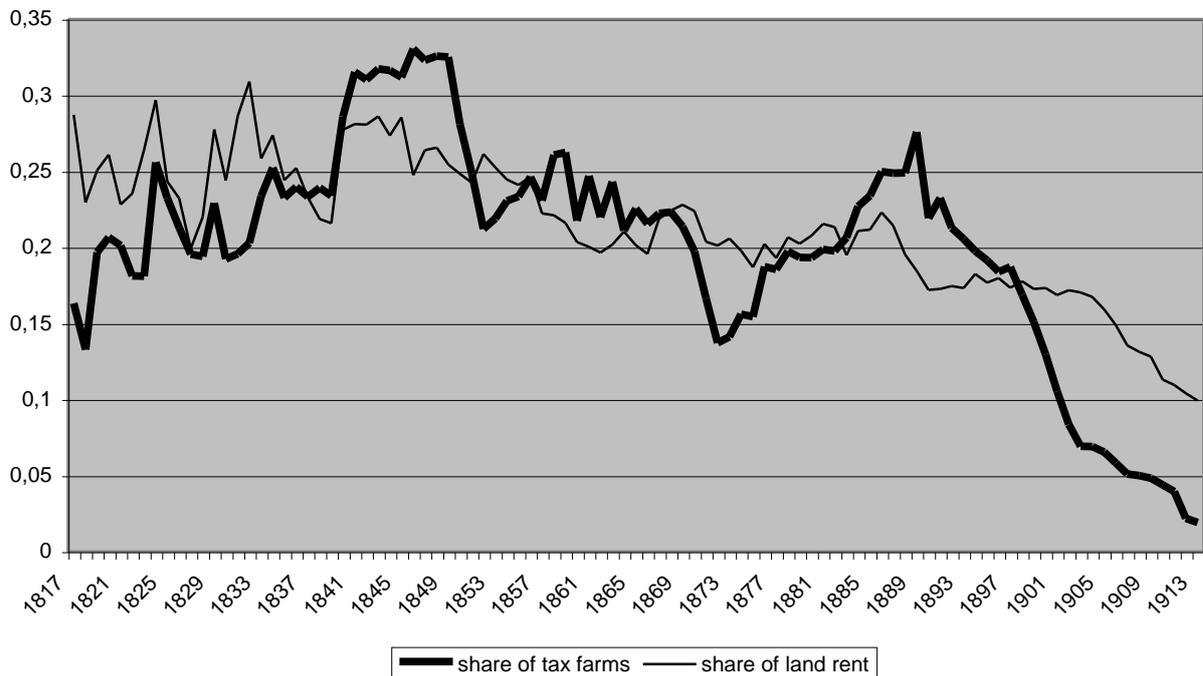
At the same time, the colonial bureaucracy resumed its mission to modernize Javanese society and economy, inspired by the liberal and left-wing criticisms against the ‘old regime’ of the Cultivation System (and in particular by its most eminent and radical proponent, Eduard Douwes Dekker). For the more radical administrators this also required changes in the modes of social control practiced by the *priyayi* class, who had to be trained to become members of a modern bureaucracy as well. Similarly, tensions between Dutch administrators and Chinese merchants increased too. Attempts to reform the tax system in which Chinese tax farmers still played a big role, brought these tensions to the surface. The opium farm became a constant source of experiments to control the power of tax farmers – who had a clear interest in pushing as much opium as possible – and of illegal smugglers of opium (who often colluded with tax farmers), increasingly with the aim to protect the Javanese population against these temptations. Similarly, in 1870 the monopoly on pawn houses, which was

farmed out to Chinese merchants, was abolished and replaced by a system of licenses, in the hope that this would undermine the quasi-monopolies these Chinese had on rural capital markets (see for this aborted experiment during the 1870s Van Zanden in press).

Initially many of these experiments failed; the colonial administration still badly needed the Chinese to organize their ('dirty') business, i.e. tax collection and opium selling. The attempt to liberalize the pawn house system in fact led to a rise of interest rates and of malpractices in the countryside (according to civil servants). In 1880, after ten year, the old system, but now regulated even more strictly, was introduced again.

The gradual growth of the colonial administration –its administrative capabilities, its knowledge of the Javanese society and its reforms of the indigenous elite- led to a decisive breakthrough in the 1890s. Through a number of drastic reforms of the tax system, the old excises were abolished and replaced by taxes that were in fact managed – set, collected and controlled – by the colonial administration itself. The opium farm became a monopoly strictly regulated by government agencies, which for example registered those who bought the drug (van Luijk and Van Ours 2001); regulated pawnshops and state-owned local credit banks replaced the pawn houses. This was also made possible by the introduction and refinement of new direct taxes on income and property, which radically changed the structure of state income; again, these modern taxes were directly managed by the colonial administration. As a result, the link that had existed between Chinese community (i.e. the tax farmers) and the colonial state, which had been one of the building blocks of colonial society until the 1890s, was now disconnected. The decreasingly importance of tax farms in colonial finance is evident from Figure 5, which also demonstrates that the land rent – which was to a large extent based on a close cooperation between village elite and colonial administration – also declined strongly in importance. Increasingly then, the Dutch colonial bureaucracy due to its growing administrative capabilities became independent of the two other systems of social control on which it had relied during much of the 19th century, Chinese middlemen and the indigenous elite. Consequently, it could implement its own programme for social and economic reform.

Figure 5 Shares of tax farms and land rent in total income Netherlands Indies' government, 1817-1914



Source: *Changing Economy in Indonesia*, 2 (Public Finance).

The ethical policy that was officially inaugurated in 1901 is often seen as the result of the ongoing debate *within* the Netherlands about the preferred colonial policy. The official declaration that the Dutch state considered it its duty to improve the welfare of the Indonesian population –whereas before 1901 the colony was officially considered to be a *wingewest*– is considered to be a watershed in Dutch politics. It also reflected changes in domestic policies towards the working class (i.e. the gradual introduction of welfare reforms) that were consistent with changing power balances within the Netherlands (i.e. the rising influence of middle and labour classes in politics as a result of the gradual extension of the franchise) (Van Zanden and Van Riel, 2000: pp. 311-22). The point to make here is that the indigenous (i.e. Netherlands-Indian) determinants of this switch in policy have often been overlooked. The ethical policy was in a way the programme of the administration that in the 1890s had become the dominant force in the colony. The ethical policy was, *pace* Van Doorn (1994), the ideology of the Netherlands East Indies as a *Beambtenstaat*.

The 1901 address by the Queen was the starting point of an impressive series of reforms focusing on the introduction of welfare services aimed at improving the economy and

living standards of the indigenous population. These included modern agricultural research and extension services (which were already pioneered by the sugar industry, but were now extended to peasant agriculture), increased expenditure on infrastructure, irrigation and education (which also had been focused on the needs of the European population, but was now restructured and to some extent geared towards the indigenous population), medical services, policies aimed at stabilizing rice markets and regulating rural capital markets, etc. etc. (Boomgaard 1986; Van der Eng 1993a).

This renewed attempt to reform the colony ‘from above’ – and at the expense to some extent of the cooperation with former partners such as the Chinese and the indigenous Javanese elite – did not really give rise to tensions with these old ‘partners’. The Chinese completely concentrated on entrepreneurial activities; since the economy was booming, there were plenty opportunities for them to switch from tax collection to other activities. Step by step, the Javanese elite became incorporated into the new bureaucratic state (Sutherland 1979). Tensions appeared – but only after 1918 – with the new commercial elite of European, mainly Dutch entrepreneurs, who feared that the modernizing efforts of the civil servants would loosen the grip of Dutch interest groups on the colony and that the ‘expensive’ welfare services resulted in high taxes to be paid for by Dutch colonial business. Recent assessments of these colonial welfare services by Van der Eng (agricultural services) and Boomgaard (all welfare services) have in general been positive: they created favourable conditions for market exchange and productivity growth (in agriculture), and enhanced the general welfare level of the population (Boomgaard 1986; Van der Eng 1993a).

The long run consequences of these market-oriented policies, which in fact already began during the 1860s and 1870s but took a new, more radical turn during the 1890s and 1900s, were also quite benevolent: economic growth clearly accelerated during the 1890s and was relatively fast until 1913. Per capita consumption levels also showed a continuous increase in those years, as did total factor productivity (figures 2 and 3). Whereas peasant agriculture had – in per capita terms – stagnated in the period before 1890, it now began to contribute significantly to productivity growth, as Van der Eng (1993a) has shown. This may well have been a response to the much more favourable conditions on (rural) markets.

Conclusion

Colonial state formation in the Javanese case went through a number of distinct phases, which illustrate nicely the dilemmas and problems involved. There are a few similarities with the long-term process of state-formation in European history, which stretches from the age of feudalism to the middle of the 19th century. Colonial states, to begin with, had to be viable. Funding the administration that formed its core was one of the critical issues, as funding the early modern state had been a critical issue in European state formation. A possible strategy was to exploit the link with pre-existing socio-political structures. The East India Company before 1800, and again the Dutch state under William I could not resist this temptation and used 'feudal' mechanisms of surplus extraction (in combination with – in the post 1830 case of the Cultivation System – a fine-tuned system of incentives to recruit the cooperation of indigenous elites) to finance the colonial state. Developing export agriculture based on free labour and entrepreneurship and taxing its proceeds was an alternative strategy, which was pioneered between 1808-1826 (in particular in 1816-1826). This first attempts failed however, for a combination of reasons: the new state estranged itself from indigenous elites (which resulted in the Java war of 1825-1830), peasants and entrepreneurs failed to respond to the new opportunities that were created (but world markets were in depression, and export production on Java was probably often not competitive on world markets), and labour was in short supply as Java was still a frontier-economy with large amounts of virgin land that could be reclaimed. The net result was a weak economy that was unable to generate the taxes to finance the colonial state, and the export surpluses demanded by the Dutch state. During the second half of the 19th century a similar strategy was carried out, which proved much more successful; a (more or less) free labour market came into existence (as the frontier of Java was closed in the 1880s), entrepreneurship responded much more positively after 1870 (but this was to some extent due to the greater expertise acquired during the previous period) - when world markets expanded rapidly and transport costs fell dramatically - and the colonial state acquired a much greater degree of autonomy vis a vis indigenous elites, in particular after 1890.

The choice of strategy was therefore the result of many, often contradictory forces. Changes in ideology and political currents in the Netherlands (and in western Europe in general) also impacted on these choices. It is, for example, no coincidence that the Cultivation System was introduced in a period when Dutch politics went through an authoritarian phase (during the second half of the reign of King William I 1815-1840), and that the turn to

liberalism occurred after 1848 (although with a considerable time-lag). Until the 1850s and 1860s the main aim of colonial rule was to transfer income directly – via the channels of the colonial state – into the coffers of the Dutch treasury, a policy that was particularly successful during the Cultivation System (when perhaps as much as 8 to 12% of Javanese GDP was transferred to the Netherlands). With the turn to liberal economic policies in the 1860s this goal disappeared, and from the late 1870s onwards the Dutch state was in fact subsidizing the colonial treasury, initially to finance the war effort aimed at pacifying the ‘outer-provinces’, in particular *Aceh*; in the long run these transfers became of a structural character. Large net transfers to the Netherlands were increasingly the result of the flowering of Dutch (and British) colonial enterprise in the colony. This all points to the fact that the colonial state was not – as the European states increasingly pretended to be – based on an implicit contract with its inhabitants, but that the defining contract was between the colonial state and the metropolis. The decisive debates about colonial policy took place in the ‘mother country’, not in the colony itself, and there the strategic decisions were made, although some reforms and initiatives were of course developed in Java itself.

This paper, as any paper on 19th century Java, had to deal with the Cultivation System. It was a striking example of social and economic engineering – striking in particular because it happened during the 1830s and 1840s, long before economists started to consider the idea of central planning of the economy -, orchestrated by a ‘developmental state’ aimed at restructuring the Javanese economy to its own advantage. It made use of a rudimentary system of central planning, in which production quotas were allocated to residencies and – within each residency – to districts, in combination with a delicate system of material incentives, which made it possible to enlist the support of indigenous elites. The flip side of the story is that because it ignored the market, it turned out to be very inefficient; these inefficiencies in the medium long run crippled the system and led to its gradual replacement by more market-conform export production. An important point to make is that the ultimate success of market-oriented policies were due to both the failures and the successes of the previous period of the Cultivation System. The financial basis for a much more elaborate administration and a much deeper impact of colonial administration on Javanese society was laid by the Cultivation System, which led to a strong increase in export production and (in this way) in tax income for the colonial state. The Cultivation System also increased the expertise about the economic potential of the island, and resulted in an accumulation of capital and the growth of entrepreneurship by groups working initially in the margins of the system (such as

Chinese sugar manufacturers). These groups prospered to such an extent that they slowly began to take over the export production of the island themselves.

A final point that is made in the paper is that these shifts in colonial policy had important consequences for the pattern of economic development. The Cultivation System led to the disastrous famines of the 1840s, whereas the liberal economic policies of the post 1870 period resulted in a strong increase in GDP and consumption per capita. These links are very strong, and show how deep the impact of the process colonial state formation was on Java. The underlying trend should also be acknowledged however: the industrial sector of the economy shrank in relative size – in particular because of the decline of the textile industry – whereas export agriculture (and related industries such as trade and shipping) grew in relative size. This long term trend, which accelerated during the first decade of the Cultivation System, had different causes, in particular the cheapness of imported textiles, and the long run profitability of (new) export crops. The underlying trends show that Javanese economy adapted to the changes in relative prices on world markets. But how and when they did so, was dependent on the ‘political economy’ of colonial rule that has been analysed in this paper.

References

- Aass, S. (1980) ‘The relevance of Chayanov’s macro theory to the case of Java’, in E.J. Hobsbawm, W. Kula et.al. (eds.) *Peasants in history: essays in honour of Daniel Thorner*. Calcutta, pp. 221-48.
- Bastin, J. (1954) *Raffles’ ideas on the land rent system in Java and the Mackenzie Land Tenure Commission*. ‘s-Gravenhage: Martinus Nijhoff.
- Blussé, L. (1986) *Strange company: Chinese settlers, mestizo women and the Dutch in VOC Batavia*. Dordrecht: Foris.
- Boomgaard, P. *Children of the Colonial State. Population Growth and Economic Development in Java, 1795-1880*. Amsterdam: Free University Press, 1987.
- Boomgaard, P. (1986) ‘The Welfare Services in Indonesia, 1900-1942’, *Itinerario*, X, no. 1, 57-83.
- Boomgaard, P. (2002) ‘From subsistence crises to business cycle depressions, Indonesia 1800-1940’, *Itinerario*, XXVI, ¾, 35-51.

- Booth, A. (1998) *The Indonesian Economy in the nineteenth and twentieth centuries*. London: Macmillan.
- Bosch, Joh. van den (1829) 'Advies van den Luitenant-Generaal van den Bosch over het stelsel van kolonisatie', in D.C. Steijn Parve, *Het koloniaal monopoliestelsel getoetst aan geschiedenis en staathuishoudkunde*. Zaltbommel: Joh. Noman en Zoon (published in 1851) 294-328.
- Bree, L. de (1928) *Gedenkboek van de Javasche Bank 1828 – 24 januari – 1928*. 2 vols. Weltevreden: Kolff.
- Breman, J. (1980) *The dessa on Java and the early colonial state*. Rotterdam.
- Breman, J. (1983) *Control of Land and Labour in Colonial Java*. Leiden: KITLV.
- Burger, D.H. (1975) *Sociologisch-economische geschiedenis van Indonesia*. Wageningen: Landbouwhogeschool.
- Carey, P.B.R. (1975) *Pangeran Dipanagara and the making of the Java War*. Ph D thesis Oxford, Magdalen College.
- Doorn, J.A.A. van (1994) *De laatste eeuw van Indië*. Amsterdam: Ooievaar.
- Elson, R.E. (1985) "The famine in Demak and Grobogan in 1849-50: its causes and circumstances", *Review of Indonesian and Malaysian Affairs*, 19, 1: 39-85.
- Elson, R.E. *Village Java under the Cultivation System*. Sydney: Allen & Unwin, 1994.
- Eng, P. van der (1993a) *Agricultural Growth in Indonesia since 1880*. Groningen: universiteitsdrukkerij.
- Eng, P. van der (1993b) 'The 'colonial drain' from Indonesia, 1823-1990', Canberra: Research School of Pacific Studies, Economics Division Working Paper, Southeast Asia 93/2.
- Fasseur, C. (1975) *Kultuurstelsel en Koloniale Baten. De Nederlandse exploitatie van Java 1840-1860*. Leiden: Universitaire Pers.
- Hugenholtz, W.R. (1986) "Famine and food supply in Java 1830-1914." In *Two Colonial Empires*, edited by C.A. Bayly and D.H.A. Kolff, 155-88. Dordrecht: Martinus Nijhoff.
- Laanen, J.T.N. van. "Money and Banking 1816-1940." *Changing economy in Indonesia* 6, Amsterdam: Royal Tropical Institute, 1980.
- Eric W. Van Luijk, Jan C. Van Ours (2001), *The Effects of Government Policy on Drug Use: Java, 1875-1904*, *Journal of Economic History*, LXI, 1-19.
- Nagtegaal, L (1996) *Riding the Dutch tiger: the Dutch East Indies Company and the northeast coast of Java 1680-1743*. Leiden: KITLV Press.
- Rush, J.R. (1990) *Opium to Java : revenue farming and Chinese enterprise in colonial Indonesia, 1860-1910*. Ithaca: Cornell Press.

Stevens, Th. (1982) *Van der Capellen's koloniale ambitie op Java*. Amsterdam: Historisch Seminarium.

Sutherland, H. (1979) *The making of a bureaucratic elite. The colonial transformation of the Javanese Priyayi*. Singapore: Heinemann.

Talens, J. (1999) *Een feodale samenleving in koloniaal vaarwater. Staatsvorming, koloniale expansie en economische onderontwikkeling in Banten, West-Java (1600-1750)*. Hilversum: Verloren.

Zanden, J.L. van (2002) Economic growth in Java 1815-1939. The reconstruction of the historical national accounts of a colonial economy. Working Memorandum IISG, published at <http://www.iisg.nl/research/jvz-reconstruction.pdf>

Zanden, J.L. van (in press) 'On the efficiency of markets for agricultural products: Rice prices and capital markets on Java, 1823-1853' to be published in *Journal of Economic History*.

Zanden, J.L. van, and A. van Riel (2000) *Nederland 1780-1914. Staat, instituties en economische ontwikkeling*. Amsterdam: Balans.