Dutch disease and policy adjustments to the oil boom: a comparative study of Indonesia and Mexico

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Dutch disease and, more recently, resource curse thesis have been critical issues for development of resource abundant economies. This paper attempts a comparison between Indonesia and Mexico in their policy adjustments to the oil boom with special reference to the Dutch disease. There exists a striking contrast, especially in their fiscal, foreign borrowing, and exchange rate policies, and confirms the conventional understanding that a booming government should be conservative, as was the case in Indonesia, in its macroeconomic management to avoid the Dutch disease. Equally significant, investment use of oil revenues to strengthen the tradable sector is another factor responsible for Indonesian success. Mexico provides a clear-cut example of the resource curse thesis, but Indonesia is an exception. © 1998 Elsevier Science Ltd. All rights reserved.

The oil price hikes of the 1970s caused unprecedented transfers of income to oil-exporting countries. The oil windfalls might be expected to work in favor of economic development in these countries by relaxing traditional constraints such as foreign exchange, domestic savings, and fiscal revenues. It was observed, however, that these countries have not necessarily outperformed compared with other developing countries. This paradoxical phenomenon has been analyzed in the context of the Dutch disease, which refers to the negative effects that an export boom may have on traditional export sectors (tradable sectors). The mechanism of the Dutch disease is clear enough: part of the boom revenues is spent on the non-tradable goods which leads to an appreciation of the real exchange rate, which in turn draws resources out of the tradable sector into the non-tradable sector. This effect is termed 'spending effect' in the Dutch disease literature.[1] This general equilibrium effect is a matter

of grave concern for developing countries because they have to drive the development process through the expansion of tradable sectors. Thus, a booming economy finds itself on the horns of an unexpected dilemma: they enjoy boom revenues to boost economic development while those revenues in fact turn out to be responsible for the economic stagnation through the deterioration of the tradable sectors. In the light of the subsequent contraction of the tradable sector, we suspect that an export boom is a mixed blessing to developing countries.

In addition, recent economic literature suggests that a natural resource boom may not only lead to the Dutch disease, but it may also work as a development curse, which is termed the resource curse thesis by

[1] In the Dutch disease literature, there exists another effect termed 'resource movement effect'. The increased profitability of a booming sector bids up the prices of factors of production, which results

in a contraction of tradable sectors due to the reduction in production factors. If a booming sector is an 'enclave' in the economy, as is the case for Indonesia and Mexico, it eliminates this effect. This is why we limit the scope of our analysis only to the spending effect in this paper. See Corden and Neary (1982) for the various types of theoretical model of the Dutch disease.

Auty (1993).[2] This thesis depends on a basic recognition that resource-poor economies have outperformed as compared to resource-rich economies, and emphasizes political and institutional influences of resource boom/abundance. The negative relation between resource abundance and growth performance is explained through the impact of resource abundance on policy choice: "the richer the natural resource endowment, then, first, the longer lax macro economic policies are tolerated; second, the less pressure to achieve rapid industrial maturation; third, the longer rent-seeking groups are tolerated (and the more entrenched they become); and fourth, the greater the likelihood of decelerating and more erratic economic growth". (Auty, 1994, p. 24) It is in this way that poor performance of resource-rich countries is explained. However, Graham (1995) challenges the basic recognition implied in the resource curse thesis and suggests that the thesis is not a widespread and general phenomenon. Behrman (1987) also brings some empirical evidences against the negative effects of commodity price fluctuations on macroeconomic goal attainment. In this respect, however, Sachs and Warner (1995) provide evidence for the depressive effect of natural resource abundance on growth in their regression analysis based on the cross-country growth record. The most important finding of this study is that resource abundance remains significant after controlling for some variables founded to be important for growth, such as initial per capita income, trade policy, government efficiency, investment rates, which can be interpreted as denying validity of some of the political economy factors proposed by Auty etc. Then, they conclude that dynamic versions of the Dutch disease, which incorporate externality in manufacturing production explicitly, such as the learning-by-doing by Van Wijnbergen (1984) or the Marshallian externalities by their own,[3] might be helpful to explain poor performance of resource abundant economies. Although there are indeed a large number of studies on economic development of resource abundant countries, no consensus seems to exist as to which resource abundant economies have underperformed by inadequate policy adjustments to a resource boom. In this sense, policy responses to an export boom are still open for further research (Mainardi, 1995).

Mexico is a relatively new oil exporter: oil export started in 1975, and an oil boom continued from the mid 1970s to the early 1980s. As predicted by the Dutch disease theory, Mexican tradable sectors,

especially the manufacturing sector, contracted steadily during the oil boom (Taniura, 1989). Indonesia experienced a similar oil boom and the government budget saw an oil bonanza. Indonesia's economic achievements, however, are in sharp contrast to other oil-exporting countries including Mexico. Her non-oil export base expanded rapidly, and it is difficult to detect symptoms that the Dutch disease theory predicts. In the most comprehensive survey by Gelb (1986) and Gelb *et al.* (1988), Indonesia is deemed remarkable in that it succeeded in not experiencing a contraction of the non-oil tradable sectors.[4] The comparative economic indicators are provided in Table 1.

This paper analyses the Indonesian adjustments to the oil boom in comparison with those of Mexico. The two countries are similar both in being dependent on the primary sector including agriculture as the main source of non-oil exports and in the existence of a growing manufacturing sector. But they stand in striking contrast in their policy adjustments to the oil boom, especially in their fiscal, foreign borrowing, and exchange rate policies. The main purpose of this paper is to derive some suggestions for economic management policies which are required to avoid the Dutch disease in developing countries by investigating the two countries' experiences. The rest of the paper is organized as follows: The next section briefly reviews the Dutch disease and the policy adjustments in a theoretical context; the main section provides a contrasting description of policy adjustments in Indonesia and Mexico, and the final section presents the major conclusions with an analysis of the Indonesian political economy during the oil boom.

Dutch disease and policy adjustments: theoretical analysis

In this section we briefly review the Dutch disease theory with special reference to the policy adjustments analyzed in the following section. *Fig 1* shows the Dutch disease mechanism, where line A and B implies the equilibrium condition for both the factor and non-tradable markets, and the money market, respectively. Point *a* corresponds to the equilibrium under a flexible exchange rate system. Under a fixed exchange rate system, equilibrium moves to point *b* in the short run and long-run equilibrium is achieved at point *c* via an increase in money supply prompted by the accumulation of foreign exchange reserves due to the boom. Since long-run equilibrium is independent of nominal variables, the same degree of real appreciation is attained under both systems, which results in a contraction of the tradable sector and an

Table 1 Comparative economic indicators

		Indonesia	Mexico
Petroleum export/total export (%)	1970	38.7	2.7
	1975	74.4	15.8
	1980	65.1	63.1
	1985	25.0	66.6
GDP growth rates (real 1980 prices: %)	1970–1977	8.0	5.8
	1978–1983	6.4	4.6
Non-mining GDP by sectors (current prices: %)			
Agriculture	1970	49.7	12.5
	1975	39.4	11.5
	1982	32.7	8.2
Manufacturing	1970	9.3	24.2
	1975	11.1	24.1
	1982	16.0	23.6
Services	1970	41.0	63.3
	1975	49.5	64.4
	1982	51.3	68.3
Inflation (Consumer price: %)	1970–1977	18.1	13.9
	1978–1983	13.5	41.8
Money supply (M2: %)	1970–1977	40.6	36.6
	1978–1983	28.5	45.7
Current account/merchandise export (%)	1970	−26.4	−79.2
	1977	−0.5	−40.3
	1983	−3.3	−69.7
Government budget revenue/GDP (%)	1972	12.6	10.3
	1975	17.2	12.2
	1980	21.9	15.8
	1982	20.3	16.1
Government budget expenditure/GDP	1972	14.9	13.4
	1975	20.7	17.0
	1980	24.2	18.9
	1982	22.2	31.6
Government budget deficit/GDP (%)	1972	2.3	3.0
	1975	3.5	4.9
	1980	2.3	3.1
	1982	1.9	15.4
External public debt/GNP (%)	1973	33.5	10.2
	1982	21.1	32.7
Debt service ratio (%)	1975	14.3	41.1
	1982	16.5	44.4

Source: IMF, International Financial Statistics

expansion of the non-tradable sector. Appendix A sets out the model discussed here and gives the derivation of the principal results.

What is of crucial significance under the fixed exchange rate system is that it is pre-supposed that the government should not adopt a sterilization policy in an effort to avoid money expansion. This means, conversely, that real appreciation can be avoided through sterilization and the accumulation of foreign exchange reserves. If the oil windfall is incorporated in the government budget, as is the case with Indonesia and Mexico, fiscal policy is the primary determinant of money supply and domestic absorption. Therefore, the government could avoid real appreciation by accumulating budget surpluses. These adjustments, however, are generally unfeasible alternatives

for developing countries, because they imply giving up boom revenues, at least in the short term. Before the boom, limited budget revenues and foreign exchange played a crucial role in the government resisting the demand from a variety of constituencies for increased public expenditure. Revenue sterilization, therefore, requires a long-term perspective and bureaucratic power on the part of the government against the pressure for enjoying a bonanza in the short run (Roemer, 1983). In this connection, we should stress the importance of how the government spends oil revenues. Government spending, in general, is biased toward the non-tradable sectors such as construction and services. Wages and salaries paid to government officials are important components of government expenditure. All of this spending would
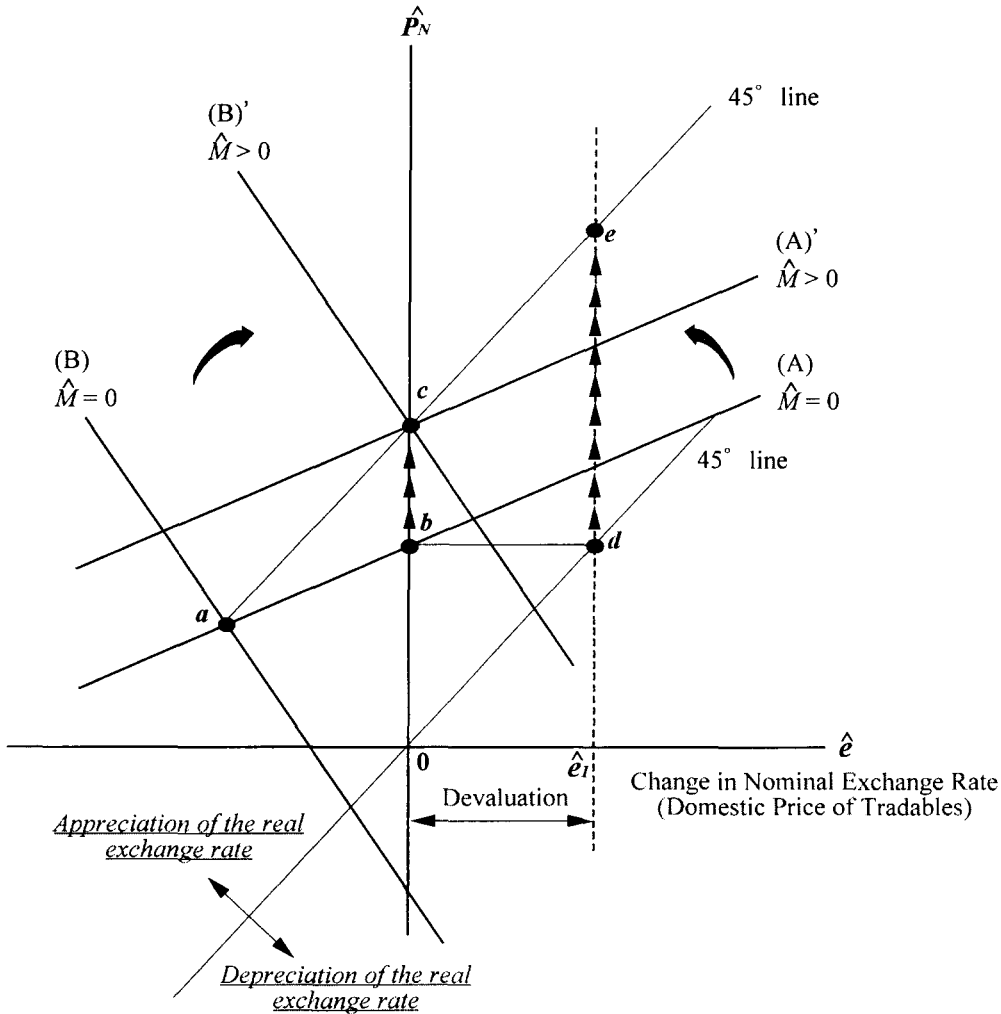
Figure 1 Monetary adjustment in Dutch disease and effect of devaluation

create excess demand for non-tradables directly and indirectly (through the expansion of domestic absorption), causing real appreciation. However, if the government uses oil revenues to protect the non-oil tradable sectors by subsidizing the output–input and so on, budget expansion does not necessarily bring about the contraction of the tradable sector (Van Wijnbergen, 1984). In this sense, the composition of budget expenditure is one of the important factors determining the magnitude of the Dutch disease. In addition, we should take into due account the government attitude toward foreign borrowing. In general, developing countries depend, to some extent, on foreign borrowing for their budget revenues. In order to sterilize oil revenues, one of the desirable adjustments would be to repay formerly accumulated foreign debts instead of absorbing them in the domestic economy. If this choice is unfeasible, the government could, at least, reduce their dependence on foreign borrowing in their revenues because they

have affluent oil money. In contrast to this expectation, some countries chose to rely heavily on external borrowing to sustain high rates of growth of domestic absorption, which resulted in a more sever deterioration of the tradable sector through real appreciation. This seems to be closely related to another sinister problem of the oil boom: oil exporting countries are attractive customers of donor countries because they were rich. Then, domestic absorption drastically increases not only oil revenues but also foreign borrowing. This controversial issue can be justly termed 'boom based borrowing capacity' in developing countries. Lastly, we analyze the effect of currency devaluation. Consider the case where the authorities recognize the appreciation of the real exchange rate, for example, at point *b* and implement currency devaluation. Although the economy moves to point *d* just after devaluation, non-tradable prices begin to rise due to excess demand. With the expansion of money supply, long-run equilibrium is gradu-

ally achieved at point *e*, where the real exchange rate appreciates to the same level as point *c*. In this case, inflation would be severe compared to that at point *c* (equilibrium with no devaluation), because real appreciation is brought about not only by a rise in non-tradable prices but also by a rise in tradable prices due to the devaluation. These results suggest that currency devaluation has no effect on the real exchange rate without appropriate demand management policies such as the accumulation of budget surpluses. This statement is entirely consistent with the well-established stylized fact derived from many empirical studies: currency devaluation accompanied by appropriate demand management policies is largely successful (Connolly and Taylor, 1976). The sustained effect of the currency devaluation on the real exchange rate would depend crucially on the macroeconomic policies accompanying the devaluation. All of these stories described above suggest that policy adjustments to the oil boom are definitely important in determining the actual impact of the Dutch disease.

A policy comparison of Indonesia and Mexico

Fiscal responses

Oil revenues accrued to the government budget through direct sales or taxes. Reflecting this fact, government fiscal revenues increased with the higher oil price in both countries (Table 1). Therefore, fiscal policy in face of the oil boom plays a substantial role in determining the impact of the oil boom on the economic structure. We examine two aspects of the fiscal responses, namely, the sterilization of the oil revenues, that is, intertemporal expenditure allocation of the oil revenues, and the composition of public expenditure, that is, how to spend the oil revenues.

First, we analyze the macro impact of fiscal policy with special reference to its role in sterilizing the rapidly growing oil revenues. In general, government expenditure mainly consists of spending on the non-tradable sectors such as construction, services, and on investments in protected sectors. In addition, personnel expenditure is another important component. All this spending directly increases the demand for non-tradables, and then, exerts an upward pressure on the real exchange rate. Furthermore, the rise in domestic absorption due to an expansionary budget policy will create excess demand for the non-tradable goods, which results in real appreciation. As described in an earlier section, fiscal policy is the primary determinant of money supply and domestic absorption. Therefore, government budget stances during the oil boom play a crucial role in determining the degree of economic effect on economic structure implied in the Dutch disease theory. First of all, we can find a striking contrast in their scales of budget surplus/deficit as percent of GDP. The Mexican government expanded its budget expenditure at an extraordinary pace to implement highly ambitious development pro-

grams, which resulted in a huge budget deficit with affluent oil revenues. On the other hand, the budget deficit to GDP ratios in Indonesia was extremely small. This sharp contrast is of crucial significance in assessing the effect of the oil boom in both countries, because it indicates that Indonesia, unlike Mexico, deliberately accumulated oil revenues and avoided the expansionary effects potentially to be brought about by abundant oil revenues.

Therefore, a proper appreciation of the Indonesian fiscal response will show the road to proper policy management to avoid the Dutch disease. The Indonesian government budget has been characterized in its commitment to the 'balanced principle'. There exists, in general, strong political pressure to expand the budget in developing countries. Considering this fact, the balanced budget principle in Indonesia has acted as 'a safety valve' to avoid the reckless expansion of the budget expenditure. During the oil boom, however, this principle was an obstacle which might bring about a drastic increase of domestic absorption. It should be remarked that foreign borrowing is accounted as a revenue item in the Indonesian definition of the balanced budget. This means that budget deficits are all financed by foreign borrowing and that there is no change in the government net position with respect to the banking sectors. Judging from the official budget data, the government budget, net of the foreign borrowing, was on a near-exact balance for all the years during the oil boom. However, that the monetary data shows quite different movements of the government net position: in the late 1970s when the oil revenues began to increase, the net position improved drastically through the increase in the government deposit. This puzzle can be explained as follows: while officially maintaining the balanced budget principle, the government exercised delicate operations whereby the budget surpluses were covertly accumulated as government deposits. It can be said that the Indonesian government deliberately gave up the balanced budget principle in order to combat sharply accelerating expansionary pressures possibly brought about by the abundant oil revenues. (For detailed description about this adjustment, see Usui, 1996a, especially Section 2 and Table 1, pp. 888–889)

Next, we analyze the composition of the budget expenditure in both countries. As described in previous section, the budget expansion does not necessarily induce the tradable sector to shrink, if the government spends oil revenues to strengthen the tradable sector. In the theoretical context, the first-best method would be to subsidize the tradable sector directly with funds from the oil revenues. That is, the government policy as to how to spend the oil revenues is of crucial importance in assessing the effects of Dutch disease. Comparing the composition of government expenditure in Table 2, we can find the crucial difference between the two countries in their relative shares of current and capital (investment) expenditure. The Mexican expenditure was biased toward cur-

Table 2 Government expenditure structures

	Indonesia				Mexico			
	Current expenditure (bill. Rupiah)	(%)	Capital expenditure (bill. Rupiah)	(%)	Current expenditure (bill. Peso)	(%)	Capital expenditure (bill. Peso)	(%)
1972	412.0	57.4	306.2	42.6	47.1	70.1	20.1	29.9
1973	694.9	63.0	408.1	37.0	62.4	70.8	25.7	29.2
1974	1 282.1	69.1	574.2	30.9	92.5	74.7	31.4	25.3
1975	1 519.1	58.6	1 073.1	41.4	124.0	76.7	37.7	23.3
1976	1 808.6	53.6	1 565.9	46.4	158.7	75.0	53.0	25.0
1977	2 113.5	57.9	1 539.9	42.1	221.9	77.7	63.6	22.3
1978	2 571.0	52.8	2 299.8	47.2	275.9	75.1	91.6	24.9
1979	3 958.7	54.4	3 324.9	45.6	349.4	69.2	155.8	30.8
1980	5 730.5	52.9	5 095.3	47.1	506.6	67.5	243.6	32.5
1981	6 882.6	48.3	7 363.5	51.7	842.6	71.3	339.6	28.7
1982	6 996.3	51.6	6 572.7	48.4	2 190.7	77.4	638.6	22.6
1983	8 411.1	51.3	7 971.0	48.7	3 660.0	81.9	808.2	18.1
Average		55.9		44.1		73.9		26.1

Source: IMF, International Financial Statistics. Supplement on Government Finance (1986)

rent spending, while the share of capital expenditure in Indonesia had been maintained high. This simple fact suggests that the oil revenue in Indonesia was spent more on investment purpose compared with Mexico. In Mexico, however, public investment soared and the share of investment in GDP rose to 30 percent in 1981. This extraordinary expansion of the public sector investment brought about a sharp rise in imports, mostly of capital and intermediate goods, which resulted in a huge deficit in trade balance. However, the most important fact we should pay attention to here is the strong bias of the government investment toward the oil sector (Table 3). During the oil boom, the Mexican government spent most of the oil revenues in promoting oil production by investing heavily in the state oil company, PEMEX. This

implies that the necessity to protect the tradable sector during the oil boom was to a large extent neglected by the Mexican government. This is clearly the reverse of what should have been done to avoid the effects of Dutch disease. In contrast, as shown in Table 3, the Indonesian budget expenditure was more balanced: spent on infrastructure, social services, agriculture, and industry as well. The oil revenues went to agriculture and industry, that is, tradable sectors to strengthen their production. The most arresting feature is found in her agricultural policy (Booth, 1988; Glassburner, 1985). The Indonesian government consistently put a high priority on agricultural development, especially rice production, with considerable emphasis on research and extension (BIMAS), investment in irrigation, and subsidization

Table 3 Capital expenditure by sectors

Indonesia[a]	1975	1978	1979	1980	1981
Industry and mining	8.9	8.0	8.9	8.3	11.9
Agriculture	18.4	17.6	12.7	15.7	13.7
Electric power	9.2	10.6	9.4	7.3	7.6
Transportation	22.3	16.2	11.6	13.2	11.6
Regional development	12.4	10.8	8.4	8.1	8.9
Education	8.2	9.8	9.0	9.7	10.5
Others	20.7	27.0	40.1	37.7	35.7
Total	100.0	100.0	100.0	100.0	100.0
Mexico[b]					
Oil	20.5	51.9	52.9	49.1	55.9
Electric power	28.8	22.1	22.6	22.2	19.3
Steel	4.5	0.8	1.1	1.7	2.0
Communication	17.5	7.5	5.7	5.5	4.8
Others	28.7	17.7	17.7	21.5	18.0
Total	100.0	100.0	100.0	100.0	100.0

[a] Development Expenditure by Sectors.
[b] Public Investment by Sectors
Sources: Bank Indonesia, Indonesian Financial Statistics, Taniura (1989), Table 12

of fertilizer. With the arrival of the Green Revolution, the Indonesian government spent the oil revenues on encouraging the intensive use of fertilizer in rice production, on which the new high-yielding rice varieties are very dependent. At the same time, the national logistic agency (BULOG) was given the right to intervene in the domestic rice market to keep the producer price of rice above the officially determined floor price. The fertilizer subsidy and price support of rice improved the fertilizer/rice price ratio, which gave a strong incentive for farmers to increase their fertilizer use. As a result, Indonesia achieved self-sufficiency in rice production in the mid 1980s. All these facts suggest that there exists an important difference in the composition of government spending between Indonesia and Mexico, and they also indicate that the investment use of the oil revenues to facilitate the growth of the tradable sector was one of the factors leading to the Indonesian success in avoiding the Dutch disease.

Foreign borrowing

We examine the government attitude toward foreign borrowing during the oil boom period. The government is the biggest borrower and investor in both countries. Since fiscal deficits feed into current account deficits, which are financed either by foreign borrowing or by withdrawal of foreign exchange reserves, there exists a strong relationship between fiscal policy and foreign borrowing. In the short run, since an inflow of foreign money can be regarded as an income transfer just like an oil bonanza, an increase of foreign borrowing during the oil boom is expected to bring about more severe stagnation of the tradable sector through still more expansion of domestic absorption. That is, if the government increases foreign borrowing during a boom, additional income transfer should require a more severe structural adjustment to the economy concerned. From the standpoint of revenue sterilization, as pointed out in an earlier section, one of the desirable adjustments is to repay formerly accumulated foreign debts instead of absorbing the oil revenues in the domestic economy. If this choice is unfeasible, the government could, at least, reduce their dependence on foreign borrowing in her revenues, that is, substitute oil revenues for foreign borrowing. However, some countries increased their dependence on external borrowing during the oil boom, and sustained high rates of growth of domestic absorption. This resulted in more severe deterioration of the tradable sector through the additional appreciation of the real exchange rate. We termed this problem 'boom based borrowing capacity': the borrowing capacity of the booming countries might be improved drastically because they turn out to be attractive customers of donor countries. This is why we have to pay due attention to the government attitude toward foreign borrowing during the oil boom.

Backed with the huge oil revenues, Pertamina,

Indonesian's state-owned oil company, expanded its activity to a variety of other areas such as steel plant, real estate, tanker fleet, resort hotel, fertilizer plant, and so on. To control this recklessly expanding activities, the government introduced a new regulation that stipulates that all state enterprises, including Pertamina, have to get an approval from the government to secure any medium- and long-term external loans to finance their projects. Pertamina responded to this regulation by shifting from medium- and long-term loans to short-term ones. In 1975, however, Pertamina defaulted on its short-term debt of more than US$ ten billion. This incident exerted a strong influence upon the Indonesian foreign borrowing strategy in the following oil boom years (Woo *et al.*, 1994). In response to the Pertamina Crisis, the Indonesian government introduced two measures. First, official borrowing in the short-term market was prohibited. Second, neither the state nor the state enterprises could get any external loans without the permission by the Bank Indonesia and the Ministry of Finance. These regulations turned out to be beneficial to the Indonesian management of its external debts in the following oil boom period. In Table 4, we can find three characteristics of this conservative stance on foreign borrowing: Relatively low interest rate, long maturities, and long grace periods. During the 1978–82 period Indonesia's ratio of short-term debts to imports never exceeded 18 percent, while Mexico's never fell below 30 percent. Since the short-term interest rate was usually below the long-term interest rate, short-term borrowing was preferred to long-term borrowing. In this case, however, debtors should accept the risk of a future upward movement of interest rate. The Indonesian low ratio of its short-term debts to imports resulted from the cautious management of external debts by policy makers, who were strongly influenced by the 'Pertamina Crisis' and were able to absorb the policy lesson from this bitter experience. Despite the boom borrowing capacity, the total amount of foreign borrowing in Indonesia was well under control by the government, while Mexico accumulated its external debts, especially in its short-term debts. In Mexico, a sharp increase of foreign debts during the oil boom was deeply rooted in the current account deficits caused both by the government's highly aggressive development programs and by the capital flight on a large scale which reflected the lack of public confidence in the economic management by the government. In contrast with the Indonesian cautious debt management, the Mexican government expenditure grew much faster than their revenues, and the resulting expansion of domestic absorption produced widening deficits in their current account balances, which were financed by foreign borrowing. The government attitude toward foreign borrowing, which reflected the government's expectation of continuing increase in oil revenues, were the primary cause of the 1982 debt crisis, when Mexico defaulted with the sharp rise of the interest rate due to the disinflationary

Table 4 Foreign debt structures (%)

Indonesia	1978	1980	1981	1982	1983
Debt service/GNP	9.3	7.5	7.3	9.2	10.7
Debt service ratio	25.0	12.6	12.9	16.5	18.4
Percentage of short-term debt	9.9	13.3	14.4	18.1	15.6
Short-term debt/imports	14.0	14.3	12.7	17.9	n.a.
Effective interest rate for all debt	17.5	15.5	16.6	16.1	14.6
Mexico					
Debt service/GNP	12.0	14.1	15.5	24.8	17.4
Debt service ratio	62.4	37.8	34.7	44.4	43.8
Percentage of short-term debt	14.0	28.3	32.1	30.5	11.1
Short-term debt/imports	33.5	48.9	55.9	76.7	n.a.
Effective interest rate for all debt	23.4	22.8	20.1	20.8	15.9

Sources: IMF, International Financial Statistics, Woo *et al.* (1994), Table 10.4

monetary policies in developed countries. It can be said that the Mexican government should have managed its external debts more cautiously during the oil boom period.

Currency devaluation

As described in an earlier section, the key parameter of the Dutch disease is the real exchange rate. This directly implies that one of the policy options for the government is to devalue the currency in order to avoid or revise the appreciation of the real exchange rate. During the oil boom period, Indonesia and Mexico alike implemented currency devaluation. Since 1955, the nominal exchange rate in Mexico had been fixed for twenty-five years at the level of 12.5 pesos per US dollar. The real exchange rate had appreciated continuously during this period due to the inflation deference between her trade partners, which deteriorated its current account deficits and increased its external debts. From 1974 to 1976, the public debt rose from US$ 11 billion to US$ 21 billion. This jump partially reflected the growing capital flight: The error and omissions in the balance of payments increased from a negative US$ 479 million to a negative US$ 3 billion in the same period. In face of this substantial disequilibrium in the external sector, the Mexican government devalued the peso in 1976 to 19 pesos and, in 1977, to 22.6 pesos. On the other hand, in Indonesia, the exchange rate was devalued from 415 rupiahs per US dollar in 1978, the level at which it had been pegged since 1971, to 625. This devaluation, however, was not inspired by balance of payments' considerations because Indonesia's foreign exchange reserves stood at US$ 2.2 billion, the highest level in her history, and the trade balances represented a surplus of US$ 7.4 million during the second quarter of 1978. The Indonesian policy was motivated primarily to improve the profitability of the tradable sector which had been under increasing cost pressure due to higher inflation under the fixed

exchange rate (Warr, 1986).[5] In both cases, even if their motivations were different, the purposes of the currency devaluation was to generate real depreciation (decrease in the relative price of the non-tradable to tradable goods), and in turn to change the allocation pattern of resources to support the development of the tradable sectors. In this connection, sustainability of the devaluation effect on the real exchange rate is of great importance, because economic agents will be reluctant to invest in the tradable sector without their confidence in the government's ability to maintain the new exchange rate. If they find, after devaluation, a fast or steady erosion of the devaluation effect on the real exchange rate, they are unlikely to recognize the real depreciation due to the devaluation as a reliable signal which they depend on in determining their decision making. Our theoretical analysis suggests that currency devaluation has no effect on the real exchange rate without appropriate demand management policies to avoid the expansion of domestic absorption. A sustained devaluation effect, that is, the success of devaluation, depends largely on the macroeconomic policies accompanying the devaluation.

In just a few years after the 1976 and 1977 devaluation, the real exchange rate in Mexico showed a sharp appreciation (Table 5). This appreciation was rooted in the government budget expansion in pursuing ambitious development programs. Contrary to the theoretical claim, the Mexican government failed to implement the appropriate demand management policies needed to sustain the devaluation effect. The situation worsened in the early 1980s, when the world interest rate began to rise and the oil price started to decline. An adjustment in macroeconomic policy, including an extensive budget cutback and a realignment of the exchange rate, was in order. The Mexican

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[5]The currency devaluation for protecting the tradable sector is termed 'exchange rate protection' by Corden (1982).

Table 5 Real exchange rates

	Industrial countries EUV[a] (1975 = 100)	Indonesia			Mexico		
		Consumer price (1975 = 100)	Nominal exchange rate (1975 = 100)	Real exchange rate[b] (1975 = 1.00)	Consumer price (1975 = 100)	Nominal exchange rate (1975 = 100)	Real exchange rate[b] (1975 = 1.00)
1970	51.6	41.3	87.4	0.92	56.5	100.0	1.10
1971	54.5	43.1	94.4	0.84	59.7	100.0	1.10
1972	59.7	45.5	100.0	0.76	62.6	100.0	1.05
1973	72.1	59.9	100.0	0.83	70.2	100.0	0.97
1974	89.8	84.4	100.0	0.94	86.6	100.0	0.96
1975	100.0	100.0	100.0	1.00	100.0	100.0	1.00
1976	99.7	120.4	100.0	1.21	115.7	123.4	0.94
1977	107.8	133.5	100.0	1.24	149.2	180.6	0.77
1978	121.5	144.3	106.5	1.12	175.4	182.1	0.79
1979	140.3	170.1	150.1	0.81	207.1	182.4	0.81
1980	159.2	196.4	151.1	0.82	261.8	183.6	0.90
1981	153.2	220.4	152.2	0.94	334.8	196.1	1.11
1982	147.8	241.4	159.4	1.02	532.2	451.2	0.80
1983	142.8	269.9	219.1	0.86	1 074.3	960.8	0.78
1984	138.9	297.9	247.2	0.87	1 775.9	1 342.4	0.95
1985	138.4	312.1	267.6	0.84	2 801.0	2 055.2	0.98

[a] EUV: Export Unit Value of Industrial Countries
[b] Real Exchange Rate = (Consumer Price)/(Export Unit Value of Industrial Countries × Nominal Exchange Rate)
Source: IMF, International Financial Statistics

government, however, did not adopt this type of conservative policies, and maintained its expansionary stance on macroeconomic management, which resulted in a sharp increase of foreign borrowing. This reckless government attitude awakened a growing negative expectation regarding the sustainability of the economic management, which in turn triggered off a massive capital flight. Devaluation increased the cost of foreign debt service in terms of peso, and caused the government budget to deteriorate further. Still more, this prompted a widespread fear that the government might default, which generated a suspicion of a continuing need of devaluation and, thereby, further capital flight. All of these stories suggest that the Mexican government failed to sustain the devaluation effect, or, more accurately, that the devaluation in 1976 and 1977 turned out to be ineffective in avoiding the Dutch disease owing to a lack of appropriate demand management policies. On the other hand, the 1978 devaluation in Indonesia effectively reduced the real exchange rate and that its effect, even if gradually eroded, was maintained until 1982. In spite of the gradual erosion of the devaluation effect on the real exchange rate, this devaluation is widely regarded as an example of successful policy management in avoiding the effect of the Dutch disease. A decided difference regarding to the devaluation effect between Indonesia and Mexico exists in their macroeconomic policies which accompanied devaluation. The Indonesian government did implement appropriate demand management policies such as accumulation of budget surpluses, as described in the earlier part of this paper. These pol-

icy adjustments suggest that Indonesia responded to the oil export boom in a manner consistent with the policy adjustments which are required to avoid the Dutch disease[6]. It seems that the 1978 devaluation gave a clear signal for the public to invest in the non-oil tradable sector (Arndt and Sundrum, 1984). There has been an interesting puzzle: The Dutch disease theory predicts that the oil boom must be accommodated by real appreciation, yet Indonesia devalued its currency during the boom period while simultaneously running a 'balanced budget principle'. Now we can solve this puzzle. The answer is that the Indonesian budget was not really balanced but rather that a surplus was covertly accumulated by delicate procedures. This deflationary fiscal stance succeeded in avoiding a quick erosion of the devaluation effect on real exchange rate.

Major conclusions

In this paper we have made a comparison of Indonesia and Mexico in their policy adjustments to the oil boom. The major findings of this paper can be summarized briefly. (1) While Mexico adopted a highly expansionary fiscal policy aimed at rapid development, Indonesia deliberately accumulated budget sur-

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[6]Usui (1996) analyzed the effect of two policy adjustments, namely the 1978 devaluation and accumulation of budget surpluses, to the oil boom in Indonesia by using a simple simulation model. The results confirmed that the two policies were consistent from a macroeconomic management point of view and have contributed to avoid the long-run effect of the dutch disease.

pluses under the guise of 'balanced budget principle' with delicate operations: the Indonesian government wisely avoided the expansionary effects potentially to be brought about by the abundant oil revenues. This difference suggests that Indonesia succeeded in sterilizing a part of the oil bonanza, while the Mexican government spent all of the oil revenues indiscriminately, and, still more, accelerated its spending by heavy foreign borrowing. (2) As for the composition of the government expenditure, we have found that Indonesian budget expenditure was more balanced and went largely into the non-oil tradable sector, while Mexican expenditure was strongly biased toward investment in the oil sector. This contrast implies that Indonesia used its oil revenues to strengthen the production base of the tradable sector such as agriculture and manufacturing which could have been possibly damaged by the Dutch disease effect. A typical case can be found in its agricultural policies. (3) In foreign borrowing, there existed a marked contrast. Mexico accumulated its external debts, especially short-term debts, with the need to finance the current account deficits which were largely attributable to fiscal expansion, and capital flight. By contrast, Indonesia maintained a conservative stance on its foreign borrowing strategy. Indonesia made the best of their bitter experience, the Pertamina Crisis, in the following boom years. (4) Both countries devalued their currencies during the oil boom. While Mexico failed to sustain the devaluation effect due to inappropriate economic management, Indonesia succeeded in maintaining the effect with appropriate demand management policies such as building up of budget surpluses. It can be summed up that Indonesia responded to the oil boom in a manner consistent with the policy adjustments which are required to avoid the Dutch disease, while Mexico misused the oil windfalls and paid insufficient attention to the need to maintain prudent macroeconomic management.

Now, why could the Indonesian government successfully implement a series of conservative policy adjustments to the oil boom? It is the history of Indonesian political economy going back to the mid 1960s that gives a clue to this problem. Indonesia has pursued a contradictory mix of conservative and aggressive policies because decision-making power in economic management has swung between the two influential groups: The economic technocrats who are mostly educated in neoclassical economics and tend to prefer orthodox economic policies based on rational criteria, and the economic nationalists who have great sympathy with the state-led and aggressive development strategy based on their deep belief in the validity of the infant industry argument. The balance of power between the two groups is contingent basically on the domestic and international economic environment for Indonesia. We can point out two economic crises which were enormously influential on economic management in the oil boom years. The

first one is the economic collapse caused by a highly ambitious development program along the principle of 'Guided Economy' under the Sukarno regime. This development strategy meant expanding state control over the means of production, using quantitative restrictions and multiple exchange rates, favoring aggressive or nationalistic policies to achieve rapid industrialization, printing more and more money to finance budget deficits, and increasing the dependency upon external borrowing to finance large deficits in the balance of payments. This economic management inevitably came to a distressing end with the enormous economic problems in the mid 1960s. Inheriting the national economy in chaos, Soeharto's 'New Order' government started with the urgent necessity of restoring economic stability, with close coordination with the Western creditors, that is, Inter-Governmental Group for Indonesia (IGGI), the IMF, and the World Bank. The new government was characterized by its clear commitment to economic orthodoxy, which were revealed in the policies such as devaluation of rupiah, abolition of all quantitative restrictions, and conservative fiscal and monetary policies. During this rehabilitation period, technocrats acquired a dominant position in the decision-making process and the power to resist the dirigiste and expansionary policies supported by the nationalist economic agenda. This dominant position of technocrats has been preserved, until today, at the level of policy making in Indonesia, which was responsible for conservative policies during the oil boom years. The second incident is the collapse of Pertamina in 1975. With rising oil revenues from 1973 onwards, there were increasing signs that economic nationalism would recover its power in Indonesian economy. In this situation, Pertamina, the state oil company, expanded its non-oil activities and increased its dependence on external borrowing to finance its huge expenditure. In early 1975, however, Pertamina found itself unable to meet payments on its debts. In this connection, what is to be born in our mind is that Pertamina in the early 1970s was the center of economic nationalism because its highly aggressive business activities represented the development strategy favored by the economic nationalists. As a result, this crisis clipped the wings of economic nationalism and, to some extent, provided the economic technocrats with new opportunities (Robison, 1986). Although these two crises, in themselves, showed a general lack of economy management ability of the Indonesian government, they initiated a swing of the pendulum in the balance of influence over economic policy from nationalists to technocrats. The economic technocrats succeeded in taking over and implementing a series of conservative economic policies to avoid the effect of the Dutch disease, because they had learned a lesson from these bitter experiences and put it to practical use in their economic management.

The dominant position of economic technocrats was glaringly apparent especially after 1983 when the

price of oil began to go down. While the Indonesian economy declined, its growth rates were impressive compared with that of Mexico. This Indonesian economic performance was achieved by the adequate macroeconomic management and series of deregulation policies, which were embarked on just after the oil boom by economic technocrats. It is generally accepted that the weak oil price brought a decisive swing of power toward economic technocrats, which produced a series of deregulation policy packages in the 1980s. It is true that the weak oil price was a most important factor which strengthened the technocrats' position, but we must not overlook the unbroken continuity of their presence and influence in the Indonesian economic scene from the days of the oil boom. On the other hand, it was not until the oil price dropped sharply in 1986 that the Mexican government convinced the necessity of market-confirming reforms (Auty, 1994, p. 22).

Many problems of resource abundant countries can be seen as issues relating to how to manage economic rent stemming from resource production. In this context, it can be said that the Dutch disease, and also the resource curse thesis, shed light on the difficulty the government has in managing resource revenue, without losing consistency with its long-term objective of promoting economic development. Government policies in the face of a resource boom, therefore, are particularly decisive in mitigating or exacerbating the effects of the Dutch disease and the resource curse. Our analysis suggests that Mexico provides a clear-cut example of the pitfalls, but Indonesia is an exception, at least in a comparative view.

Acknowledgements

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Appendix

Appendix A

In this appendix, we derive the line A and line B in *Fig 1*, and clarify some comparative-static effects of resource boom in our model. The basic assumption of the model is that the booming sector is an 'enclave' of the economy in terms of factor markets as was the case for Indonesia and Mexico. It is assumed that both the tradable and non-tradable sectors utilize a single specific factor (capital) as well as a factor mobile between sectors (labor). In this case, the level of production in a given sector depends solely on the real product wage facing firms in that sector. This is a general property of a specific-factors model with labor as the only mobile factor. Equilibrium in the model can be characterized in terms of

the market-clearing conditions for three markets: the factor market, the non-tradable market, and the money market. Denoting wage rate, non-tradable prices, and domestic tradable prices as w, P_N, and e, respectively, and setting the world price of tradables equals to unity, the clearing condition of the factor market can be written as: (see Corden and Neary (1982) for detailed derivation of this condition)

$$\hat{w} = \epsilon_N \hat{P}_N + \epsilon_T \hat{e} \quad \epsilon_N + \epsilon_T = 1, 0 < \epsilon_N, \epsilon_T < 1$$

where N and T stand for the non-tradable and tradable sectors respectively, ϵ_i is the proportional contribution of sector i to the wage elasticity of the aggregate demand for labor, and a circumflex ($\hat{\ }$) denotes a proportional rate of change in a variable, for example $\hat{x} = d(\ln x)$. Note e in this context is nothing but the nominal exchange rate. Turning to the non-tradable market, it is assumed that the demand for non-tradable is a function of changes in the real exchange rate and in the level of real income. In addition to this, we allow for the real-balance effect on the non-tradable demand following Neary (1985). Hence, its demand and supply function can be written as follows;

$$\hat{C}_N = \mu_N(\hat{P}_N - \hat{e}) + \eta_N \hat{Y} + \delta(\hat{M} - \hat{P})$$

$$\hat{X}_N = \phi_N(\hat{P}_N - \hat{w})$$

where μ_N, η_N, and δ are price, income, and the real-balance elasticities of demand for non-tradable goods respectively, M: nominal stock of money, $P(= \beta_N \hat{P}_N + \beta_T \hat{e})$: general price level, $Y(= T)$: boom revenue, and ϕ_N is price elasticity of supply for non-tradable goods. Equating demand and supply of the non-tradables, therefore yields the clearing condition of the nontradable markets as follows;

$$\hat{w} = \frac{1}{\phi_N} [(\mu_N + \phi_N + \delta\beta_N)\hat{P}_N - (\mu_N + \delta\beta_T)\hat{e} - \eta_N T - \delta\hat{M}]$$

Rearranging the clearing conditions of the factor market and the non-tradable market, we can get the relationship between non-tradable and tradable price (nominal exchange rate) while satisfying the equilibrium in both markets.

$$\hat{P} = \frac{1}{(\mu_N + \phi_N + \delta\beta_N - \phi_N\epsilon_N)} [(\mu_N + \phi_N\epsilon_T - \delta\beta_T)\hat{e} \qquad (A)$$
$$+ \eta_N T + \delta\hat{M}]$$

This equation is represented by line A in *Fig 1*. The determination of equilibrium is completed by adding equilibrium conditions for the money market. Assuming that real money balances is determined only by income level, money demand in real terms can be written as: $\hat{M} - \hat{P} = \gamma\hat{Y}$, where γ is the income elasticity of real money demand. Hence, equilibrium of the money market can be written as:

$$\hat{P}_N = \frac{1}{\beta_N} (- \beta_T \hat{e} - \gamma T + \hat{M}) \qquad (B)$$

This equation is represented by line B in *Fig 1*. The level of the real exchange rate before the boom is represented by a 45° line from the origin, i.e., $\hat{P}_N - \hat{e} = 0$. If the exchange rate is flexible and the money market always clears, equilibrium after the export boom is at point a, where the real exchange rate appreciated. Under the floating exchange rate system, real appreciation comes from nominal appreciation and change in non-tradable prices. The equilibrium condition of the factor market implies that wage change is a positive weighted average of two commodity price changes. Thus, real appreciation implies $\hat{P}_N > \hat{w} > \hat{e}$, which results in the contraction of the tradable sector and the expansion of the non-tradable sector. Under a fixed exchange rate system, non-tradable prices rise to eliminate incipient excess demand and equilibrium moves to point b in the short run. Equilibrium at b cannot be sustained because of disequilibrium in the money market. Long-run equilibrium is achieved via an increase in money supply prompted by the accumulation of foreign exchange reserves due to the export boom. An increase in money supply causes both A and B to drift upward so that the equilibrium point moves upward from point b as indicated by arrows. Since long-run equilibrium is independent of nominal variables, this process will end when the same degree of appreciation in the real exchange rate under the floating exchange rate system is attained. This occurs at point c where a positive 45° line from point a intersects the vertical axes, i.e., where the appreciation of the real exchange rate is brought about by a rise in non-tradable prices alone. In this case, we also have $\hat{P}_N > \hat{w} > \hat{e} = 0$, which results in the contraction of the tradable sector and the expansion of the non-tradable sector.