EXCHANGE RATE DEPRECIATION,
THE CURRENT ACCOUNT AND WAGES

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The Conference: Exchange Rates and the Economy was jointly organised by the Centre for Economic Policy Research, ANU, and the Centre for Studies in Money, Banking and Finance, Macquarie University. The revised papers will be published in a special edition of the Economic Record, forthcoming late 1986.
SUMMARY

This paper explores various implications of depreciation brought about by the forex market. In Section I the depreciation is assumed to be based on correct expectations of a wages-break out ratified by monetary expansion.

In Section II the depreciation is assumed to be based on incorrect expectations of monetary expansion, i.e. brought about by "cowboys", and it is shown that the consequences depend on how wages and the money supply respond.

In Section III it is assumed that the depreciation was caused by the perception of a current account problem and the expectation that this would have to be rectified.

Finally, Section IV deals with the implications for real wages of the required current account improvement.
EXCHANGE RATE DEPRECIATION, THE CURRENT ACCOUNT AND WAGES

The aim here is to explore theoretically certain macroeconomic relationships that were important in Australia in 1985 and 1986. These were two years when the exchange rate floated (though with significant intervention) and the Australian dollar depreciated sharply in several steps. The principal variables are the exchange rate, the nominal wage, the average price-level, the money supply, and fiscal policy, namely real government expenditure and tax rates. Unless indicated otherwise it is assumed that there is no intervention in the foreign exchange market.

Private savings S, private investment I, the budget deficit (or, more broadly, the public sector borrowing requirement PSBR) D, will all be endogenous. Much use will be made of the identity S-I-D = CA, where CA is the current account balance, a reduction in a deficit being an increase in CA.

Essentially there are three actors or groups of actors. The first is the forex market which determines the exchange rate. The second is the collectivity of government and trade unions, with some role for the Arbitration Commission, which determines the nominal wage rate. We shall simply call this "the unions". The third is the government which determines both monetary and fiscal policy. There is an open capital market and a given world interest rate facing Australia. Capital is perfectly mobile, and bonds denominated in Australian currency and in foreign currency
are assumed to be perfect substitutes, so that the Australian interest rate can diverge from the world interest rate only to the extent that there are expectations of an exchange rate change.

A number of stories can now be told, all of which have some relevance to the events of 1985 and 1986, or at least to the discussions that accompanied these events. In the most general model each actor or group of actors has expectations about what the other actors may do, and these expectations may be correct or sensible, or not. Furthermore, the possibility of rigidities, at least in the short-term, must be allowed for.

At the end there is an extended discussion of the relationship between the real wage and the current account. In view of the focus on wage restraint combined with the concern over the current account this is an important matter. But first we are concerned with the implications of exchange rate depreciation brought about by the forex market.

I

The Wise Forex Market: Depreciation based on correct Expectations of Monetary Expansion

Let us suppose that at time $t+1$ the unions will raise the nominal wage. This might be described as a "wages break-out" or breakdown of the Accord. Alternatively, it could result from a modification of the Accord, i.e. the government weakening in
its resolve to keep wage increases low. The increase is, of course, relative to some underlying trend inflation. For a given money supply and fiscal policy such a rise in the nominal wage level would raise the real wage, squeeze profits, and if this situation lasted, lead to unemployment. Hence at time $t+2$ the government would raise the money supply and restore the real wage and employment to their original levels. At least, there would be some tendency in that direction.

We now assume that at time $t$ the forex market correctly foresees this development. The expectation that the exchange rate will depreciate at time $t+2$ immediately leads to depreciation at time $t$.

Will the exchange rate depreciate to the full extent, so that the exchange rate not only jumps at time $t$, but also would not change further later, assuming the expectations are correct? The answer is that insofar as the depreciation brought about by the market raises the average price-level and so increases the demand for money, the rate of interest has to rise. To make this higher domestic interest rate compatible with the given foreign interest rate, there has to be expectation of further depreciation. It follows that the initial jump in the exchange rate should not go all the way. At time $t$ the exchange rate jumps, and then it moves further, but gradually, to the new equilibrium rate, which it reaches at time $t+2$. The actual increase in the money supply at $t+2$ will not affect the exchange rate, since its effects will have been anticipated. The domestic interest rate will rise until $t+2$ is reached, and then, when the
money supply is actually increased and no further depreciation is expected, it will fall back to the level of the given world interest rate.\footnote{2}

There are then two questions one might ask. (i) What is the effect of the forex market being wise, i.e. having correct foresight? (ii) What difference does it make that the exchange rate floats?

(i) If the market had not anticipated the eventual situation there would have been no change in anything at time $t$, there would have been a rise in the real wage and a profit squeeze at time $t+1$, and these latter effects would have been reversed at time $t+2$. Possibly at time $t+1$ some unemployment might have resulted, though the more the monetary expansion of $t+2$ was expected the smaller this effect would be. The expectation by the forex market of these developments at time $t$ will raise the domestic prices of tradeables (or, at least, of imports) immediately, and actually lower the real wage for a time as well as increasing profits. Conceivably it might increase employment. Of course this assumes that the unions' wages behaviour would not change as a result. At time $t+1$ the wage will rise as expected. The real wage will thus rise relative to its initial and final level, but not by as much as in the case where the forex market had not anticipated developments. At $t+2$ the situation will be as before.
Essentially, the effect of the forex market’s anticipations is that the depreciation of the exchange rate and the rise in the domestic price-level are more gradual and the temporary increase in the real wage at time t+1 is less. All this seems most desirable.

(ii) If the exchange rate had been fixed but adjustable it would have had to be devalued eventually, given the rises in wages and the money supply. If it had been kept fixed at time t and t+1, while the market expected the devaluation, there would have been a speculative capital outflow and the reserves would have had to be drawn upon to maintain the rate. This might have led to a foreign exchange crisis. After the inevitable devaluation capital would have moved back again. Forex market participants would have made profits at the expense of the Reserve Bank. The undesirability of such a public subsidy to the private sector is the basis for the case for a floating exchange rate.

II

Cowboy Story: Depreciation based on Incorrect Expectations

In both 1985 and 1986 it was sometimes argued that the deprecinations were excessive, as they were based on expectations not justified by “fundamentals” but on a far too pessimistic view of the future of the Accord and of other relevant factors. According to this view, the confident young men of the Australian forex market were “cowboys” who certainly did not satisfy the
requirements of rational expectations.

We now analyse the consequences of possible "cowboy" behaviour, while allowing for various reactions from the unions and the government. We shall focus on the extreme case where, in the absence of depreciation at time t, both the average wage-level and the money supply would have stayed unchanged. All the processes we now discuss are only set in motion because of the expectations of the cowboys. If the market had not expected a wages break-out and subsequent monetary ratification, nothing would have changed.

Three sub-cases will be considered. The differences between them depend on the reactions of the unions, which determine the wage-level, and the government, which determines the money supply. At this stage fiscal policy is held constant. Each of the three cases involves dynamic processes and the stories here are only sketched out.

(1) Discounting: No Wage or Money Supply Increase

Although the exchange rate has depreciated and the local price-level has risen as a result, nominal wages may remain constant. Real wages will then fall. This result could be brought about by a nominal wage freeze or by complete "discounting" of the exchange rate effect when wages are adjusted to price changes. If the nominal money supply does not change, the real money supply will actually fall. If this situation lasted for any length of time the current account would improve
both because of the decline in the real money supply and the fall in the real wage. The first would reduce demand for tradeables and the second increase supply. Employment would rise in the tradeable sectors and fall in the non-tradeable sectors. As the current account improvement emerges, and probably even before that, when it becomes clear that wages will not change - i.e. that expectations were incorrect - the exchange rate will return to its original level. It is possible that there will have been no more than a very temporary depreciation, with no significant current account and employment effects. "Discounting" is a way of insulating the economy from cowboys.

(ii) This time we assume that the unions raise nominal wages in order to keep real wages constant in the face of a rise in the domestic price-level caused by the forex market-induced depreciation. Hence the cowboys' expectations of a nominal wage increase become self-fulfilling. But the monetary authorities hang tight: there is no rise in the money supply.

Compared to case (i) above, this time the rise in employment in tradeables will be less, if at all, because wage costs have gone up. The fall in employment in non-tradeables will be greater: not only will the fall in the real money supply reduce the demand for non-tradeables, but the higher nominal wages will raise their costs (i.e. both the demand and the supply curve for non-tradeables shift to the left). Owing to the fall in the real money supply the current account will tend to improve.
As before, the emerging improvement in the current account and the realization that the money supply will not increase, will cause the exchange rate to move back. Provided prices are as flexible downwards as upwards and that wage indexation works in both directions, the nominal wage level would then fall back again. Much would depend on how quickly expectations about monetary policy adjust to the emerging reality. It is clear that the effects of wage indexation are undesirable, even though they may be temporary. "Discounting" is better.

(iii) Vicious Circle Case 3

Finally, we come to the so-called "vicious circle" possibility which is often in people's minds. This time the nominal wage again rises when the exchange rate depreciates, so that the wages effect is self-fulfilling. But this time the money supply is increased to prevent the unemployment that might otherwise result, at least in the non-tradeable sectors. Thus the cowboys' expectations are completely self-fulfilling. The question is whether, once the new equilibrium has been attained, there need be any expectations of further monetary and nominal wage increases.

There would be such expectations if the expectations formation process were extrapolative. In that case, the system does seem to be completely unstable. Moreover, through the wages response and, above all, the monetary policy reaction the forex market is driving the whole system. But there could be no "vicious circle" if the monetary authorities were not willing to
ratify price and wage increases. It is thus true that the forex market can initiate a vicious circle process, but only because the unions insist on indexation and the government ratifies the effects with monetary expansion.

III

Current Account Problem perceived by Market

In 1985 the depreciation of the dollar could be explained partly by expectations of a wages break-out associated with, or even preceded by, excessive monetary expansion. But in 1986, with the severe deterioration of the terms of trade, the situation was transformed. The central problem was obviously the current account.

As the identity CA = S-I-D indicates, the current account deficit worsens when private savings fall, private investment rises or the budget deficit rises. The terms of trade deterioration reduced private incomes and so lowered both private savings and tax revenue. It may have reduced investment in the export sector, but overall it clearly worsened the current account.

The focus is now on the case which is close to the perceptions of 1986. Nominal wages are not expected to increase, or at least not very much, nor is significant monetary expansion expected. Rather, an unsustainable current account deficit is perceived, and this leads to an expectation of nominal depreciation for "fundamental" reasons. This expectation, in
turn, leads to immediate depreciation in the market.\textsuperscript{4}

The nominal depreciation will lead to a real depreciation. This follows essentially from the assumption of given, or only slowly rising, nominal wages. For example, if the Australian nominal wage level rises at the same rate as the foreign nominal wage-level, other things equal, nominal depreciation will improve competitiveness, which might be described as a real depreciation.\textsuperscript{5}

The question now is why the perception of a current account problem would lead to the expectation of depreciation. It should be recalled that a floating exchange rate and open capital market are assumed here. If the monetary authorities were intervening in the foreign exchange market to maintain the exchange rate or to “lean against the wind” the reserves would be running down, and clearly this could not go on indefinitely. Ultimately depreciation would be inevitable, especially if the domestic monetary effects of the intervention were sterilised, so that the domestic money supply did not decline as a result of the intervention.

It is instructive to explore the case of a floating exchange rate with no intervention, where a current account deficit must inevitably be financed by capital inflow. The accumulation of debt means that if the current account deficit is to stay constant, the non-interest current account deficit has to decline as the interest bill mounts up. But if the level of debt is to stabilise the current account itself has to fall to zero, and so the non-interest current account deficit must decline even more.
and in due course turn into a surplus. Further, if the interest rate facing Australia rises because of an increase in the risk premium, the interest bill will mount up faster, and the improvement in the non-interest current account must be correspondingly greater.

The connection with the exchange rate is simple. For given production functions, exogenously determined terms of trade, and so on, an improvement in the non-interest current account at a constant level of employment requires real depreciation (and hence nominal depreciation when nominal wages are given) combined with some decline in absorption. Output of tradables will rise and of non-tradables will fall, while demand for both will fall. At the same time the pattern of a given level of real expenditure is switched towards non-tradables. This result could be brought about, for example, by a decline in government expenditure - which reduces absorption - and the associated decline in the PSSR, which tends to reduce the domestic interest rate, lower capital inflow, and depreciate the exchange rate.\(^5\)

The market has expected that the government may wish to slow up and eventually end the steady accumulation of foreign debt. Private borrowers may also wish to slow up their debt accumulation, especially if the foreign interest rate facing Australia is raised by a growing risk premium. Thus the exchange rate depreciates now because it is anticipated that an improvement in the current account will be required. Note that the improvement is expected not for exogenous reasons (e.g. an
improvement in the terms of trade) but because of an adjustment process which requires both a fall in absorption and real depreciation.

Let us now consider the implications of the market anticipating all this. For the time being the necessary budgetary tightening measures are not taken; they are just in prospect. As in our earlier case (where the expectation was of monetary expansion) the exchange rate will depreciate now, and with a constant nominal money supply and a rise in the price-level resulting from the depreciation - the interest rate will rise, with more depreciation to come. When the fiscal contraction actually takes place the interest rate will fall back to the world level plus any risk premium that remains.

The net result is that the exchange rate anticipations are likely to anticipate some of the real effects. The depreciation brought about by the market will bring about switching of the pattern of output and demand, and the higher interest rate - though temporary - may reduce private investment and so bring about some decline in absorption. Thus the current account will improve. The effect on private investment may be reversed when the interest rate falls back again, and it must be stressed that the decline in absorption in our story is finally brought about by the decline in government spending.

Unless investment falls sufficiently owing to the higher interest rate, the market-induced depreciation may create excess demand for non-tradeables. In other words, its effect may be
expansionary and thus possibly inflationary. This would only happen if its switching effects are not delayed, as they actually have been. Moreover, if such expansionary effects were to take place, they may force the government to proceed to fiscal contraction earlier than was originally intended. Alternatively it may engage in some temporary monetary contraction designed to reverse or moderate the exchange rate effect until the fiscal contraction actually takes place.

As we well know in Australia now, the effects of a real depreciation work with long and, no doubt, variable lags. It follows that it is highly desirable for a large real depreciation to take place before the decline in absorption that is induced by the tighter fiscal policy which is eventually required. This is what the market has done for us. It has given us an early depreciation. Of course, it may have overshot, but given that, in broad terms, its prediction of the need for a severe reduction in absorption associated with real depreciation is correct, it has fulfilled a useful role in producing an early depreciation. This means also that there has been an earlier cut in real wages relative to the previously expected levels, with all the tensions this implies.
IV

Real Wages and the Current Account

In the discussion of the current account issue I have held the nominal wage level constant. Earlier I assumed that wages rise exogenously (a wages break-out) or that there is a given wage indexation formula, so that nominal wages respond in a predetermined way to an exogenous change, such as the expectation of a depreciation. But one could go further. One could regard the indexation formula itself as a possible variable. Assuming that indexation works with very short lags, this is another way of saying that the real wage becomes a policy variable.

I come thus to a matter which is particularly important for a country that has centralised wage determination and some element of indexation. What is the relationship between real wages and the current account? In Australia the indexation formula is, subject to some limits, a policy instrument, at least when we regard policy as being jointly determined by the government and the unions. It is well-accepted that real wages affect employment in the medium-run. The question is how they affect, or are related to, our immediate problem, namely the current account. The suggestion here is that a change in real wages will affect the current account, and for a change in the current account to come about, a change in the real wage may be required for a given level of employment.
I am not concerned now with nominal variables - not even with the nominal exchange rate - nor with expectations. Of course, as discussed above, exchange rate expectations are affected by what is expected about real variables, including fiscal policy and real wages. Here I wish to focus on the characteristics of various possible real outcomes. For example, would a decline in real wages - possibly brought about by nominal depreciation with nominal wages constant - improve the current account? This, in fact, has been implied so far. Here this matter is pursued further. It is combined with a related, but more subtle question. Given that the current account changes in a particular direction because of a real depreciation, what does this imply for real wages? If there is to be an improvement in the current account, to what extent will this involve a change in the real wage and in employment?

(i) How Real Wages Affect the Current Account

The current account deficit is the sum of the public sector deficit (PSBR) and the private sector excess of investment over savings. Thus one need simply ask how a reduction in real wages - brought about for example by nominal wage moderation when prices are still rising owing to monetary expansion - will affect the PSBR, private savings and private investment. Of the five effects or channels I discuss below, the first three all lead to the crucial conclusion highly relevant for current conditions that a reduction in real wages will improve the current account.
(a) The lower are private sector real wages, the greater will be private savings. This will happen mainly because savings will rise when output and employment rise. Given the appropriateness of neo-classical assumptions there will, in due course, be such employment increases when real wages fall significantly (other things equal). The gain in output and employment is likely to take place after a lag and will depend on some assurance that the real wage moderation is not just temporary. This need for assurance is crucial at present.

(b) The lower are private sector real wages, the greater eventually will be tax revenue and hence the lower will be the budget and current account deficits. There are two reasons. (1) Higher tax revenue (for given tax rates) is likely eventually to result from a shift in income distribution from wages to profits. (2) The eventual rise in output and employment will raise the tax base and, in addition, the rise in employment will reduce government expenditure on unemployment benefits.

(c) A fall in real wages in the public sector will directly reduce government expenditure and hence the budget deficit.

(d) In the short-run (a year) a shift from wages to profits in the private sector will reduce tax revenue and hence worsen the current account because taxes are collected from wage earners on a PAYE basis while taxes on profits are collected with a lag. This effect clearly works in the opposite direction from the first three effects, but is, of course, quite short-run.
(e) A fall in real wages may worsen the current account in another way. It is likely to increase investment. Firstly, it increases current profits and so may lead directly to more investment owing to funds being more readily obtained through internal financing. Secondly, the fall in real wages may lead to the expectation of continued profitability in the future and so raise the expected return on capital.

Thus the investment effect may have the net result of offsetting the first three effects and bring about a deterioration of the current account. But there is nothing undesirable about the investment effect. The current account should not necessarily be a target. A deterioration in the current account when it results from wise investment decisions should be welcomed. It might be better described as an improvement in the capital account.

(11) What a Current Account Improvement Requires

We know that, for a constant level of overall employment, a current account improvement requires a fall in absorption, brought about, for example, by a decline in government expenditure, combined with a real depreciation. In the Australian context a real depreciation could be regarded as more or less equivalent to a rise in the relative price of tradeables to non-tradeables. Output of tradeables will expand and output of non-tradeables will contract. The real wage in terms of tradeables will fall and profits in tradeables will rise, while the opposite will happen in non-tradeables.
Must the overall real wage, defined in terms of a consumption basket of tradeables and non-tradeables, fall when there is a real depreciation? This is usually assumed, though there is no general presumption from simple theory. The implicit assumption is usually that non-tradeable prices and nominal wage rates are closely related, so that a nominal depreciation, which must raise the relative prices of tradeables, will raise the average price-level relative to the level of nominal wages.

Let us now assume that, on balance, a rise in the relative price of tradeables involves a fall in the overall real wage for given overall employment. This is certainly the normal assumption and has been made earlier. A current account improvement (with overall employment constant) then requires not only a reduction in public or private spending, but also a fall in the private sector pre-tax real wage. But what happens when there is indexation and the private sector real wage cannot fall, other than in the very short-run between periods when the nominal wage is adjusted to the price-level?

The answer is that the current account can still improve, but there has to be a fall in employment. For any given current account the real wage can always be raised at the cost of reducing employment, and for a given level of employment the current account can be improved at the cost of a lower real wage. It follows that if the real wage is rigid there is a negative relationship between the current account and private sector employment.
The relationships can be illustrated by Figure 1. The diagram is rather similar to the Swan diagram; it differs in focusing on the real wage and in making changes in the real wage explicit. I shall only introduce some of the considerations listed in section IV (i) above.

The current account is shown on the vertical axis, a movement upwards being an increase in a surplus (reduction of a deficit). Employment is shown on the horizontal axis.

C₀C₀ illustrates effects (a) and (b) (2) in section IV (i) above: Higher employment and hence incomes yield more private savings and a bigger tax base, as well as reducing the cost of unemployment benefits, so that the current account tends to improve. The curve is drawn for a given level of real public expenditure. C₁C₁ is drawn for a lower level of public expenditure or for a lower public sector real wage: the same level of employment would then be consistent with a higher current account surplus.

N₀N₀ is drawn for a constant private sector real wage. It shows how employment has to decline if the current account is to improve. N₁N₁ is drawn for a lower real wage. The negative slope of these two curves is caused by the assumed link between the real exchange rate and the real wage for given employment, i.e. that real depreciation would involve, with constant employment, a lower real wage. If there were no such link the two lines would be vertical.
A fall in real government expenditure is represented by an upward movement of $0C$ to $0C'$. A fall in the public sector real wage will also have this effect. If the private sector real wage were flexible and employment constant, the current account would improve by $BA$. However, as the real wage is fixed, the current account improvement and associated real depreciation will involve some fall in employment so that the new equilibrium is at $F$.

The employment effect of a fall in the private sector real wage is represented by a movement of the $NN$ curve to the right, i.e. to $N_1N_1'$. If the current account stayed constant, the movement would be from $A$ to $B$. But the current account will improve because of the higher employment, and this improvement will involve some decline in employment, so that the new equilibrium is at $D$.

In addition, a fall in the private sector real wage is likely to shift the $CC$ curve. This is not shown in the diagram. Effects (a) and (b) in Section IV (1) above suggest that a shift from wages to profits for given employment would improve the current account, hence shifting $CC$ up, while the short-term effect (d) suggests a reduction in tax collections and hence deterioration of the current account, moving the $CC$ curve down.

One might ask how monetary policy would affect the story. The effects would, of course, be only short-term and complicated by expectations. Broadly, a monetary expansion and its associated nominal depreciation would be likely to (a) raise tax revenue because of fixed progressive tax scales -- the built-in
stabilizer -- thus shifting CC up, (b) reduce real wages since
prices are likely to rise ahead of nominal wages, especially
because of depreciation, and (c) lower the domestic interest rate
and so possibly raise private investment, hence shifting the CC
curve downwards. On balance, NN is likely to shift to the right,
while the movement of CC is ambiguous.

One might also ask how the "J-curve problem" can be
represented in the diagram. The basic idea is that the fall in
real wages, especially in the tradeable goods sectors, does not
increase output and employment in the short-run, so that it does
not lead to a quick shift of the NN curve to the right when real
wages fall. With prices of non-tradeables somewhat rigid
downwards the NN curve slopes negatively, as in the diagram, and
a current account improvement can only be obtained in the short
run through a public expenditure reduction or monetary
contraction which shifts the CC curve upwards and hence causes
unemployment.

Summary

To begin with, this paper has explored various implications
of depreciation brought about by the forex market. In section I
the depreciation was assumed to be based on correct expectations
of a wages-break out ratified by monetary expansion. It was
argued that, in that case, the market's foresight has the
desirable effect of producing a more gradual depreciation, while
the floating rate has the desirable effect of avoiding the Reserve Bank subsidising speculators. In Section II the depreciation was assumed to be based on incorrect expectations of monetary expansion, i.e. brought about by "cowboys", and it was shown that the consequences depend on how wages and the money supply respond. Discounting would insulate the economy from the cowboys.

In Section III it was assumed that the depreciation was caused by the perception of a current account problem and the expectation that this would have to be rectified. It was shown that the market's anticipation of a real depreciation brings it about earlier, which is desirable when the real effects of a depreciation emerge with a long lag.

Finally, Section IV dealt with the implications for real wages of the required current account improvement. How might a reduction of real wages affect the current account, and what does a given current account improvement imply about real wages? If real wages are rigid a current account improvement may require a fall in employment.
FOOTNOTES

1. The question arises whether the unions expected their real wage gain to be eroded. If they did expect it, why did they bother to initiate the process? Furthermore, did the government expect the wage increases? If it did, it could have avoided the intermediate period, when the real wage rose and employment possibly fell, by expanding the money supply at the same time as wages rose, rather than later. Here we just take the behaviour of unions and government as given.


3. There is an extensive literature on this subject. See Bilsen (1979), Basdev and de Grauwe (1977) and Obstfeld (1982).

4. It is possible that the expectations are excessively pessimistic, so that there could be a "cowboy" element, but for simplicity we shall assume that these expectations are correct or at least reasonable (i.e. "rational").

5. Alternatively, a real depreciation can be defined as a rise in the domestic prices of tradeables relative to non-tradeables and, given certain reasonable assumptions, this would also be brought about by a nominal depreciation combined with constant nominal wages. See Jones and Corden (1976).

6. Of course, in equilibrium, when no further exchange rate change is expected, the domestic interest rate must be equal to the given world interest rate including the risk premium.

7. I am indebted to Dr Chris Higgins of the Treasury for drawing my attention to this consideration at the Conference.
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