The Causes of the Depression in Australia*

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The depression of the 1930s had a greater impact on Australia than on most other countries. Australia's experience was, however, broadly similar to those of countries such as Canada and Argentina which also had a high dependence on exports and external funds. There has been a continuing debate over the relative importance of external and internal factors in causing and increasing the depth of the depression in Australia. There is little disagreement that the downturn in the world economy was translated to Australia by falling export prices and sales and by a cessation of foreign lending. It has been argued, however, that unfavorable domestic factors would have caused a marked downturn in any case and thus also contributed to the severity of the depression. These domestic factors were structural problems in the Australian economy created by the high level of tariff protection; the rate of growth of money wage rates in the 1920s; and a slowdown in public investment. These views are tested by simulating a macroeconometric model of the Australian economy in the interwar years. The results indicate that export prices were the major influence in initiating and determining the depth of the depression in Australia. Other factors were of secondary importance. Indeed, the depression can be viewed as an unusual economic fluctuation imposed on Australia's normal business cycle from overseas sources. © 1987 Academic Press, Inc.

The purpose of this paper is to outline and evaluate some alternative views on the causes of the great depression in Australia in the 1930s and to explain why Australia suffered a deeper contraction than did most other countries. The method of evaluation used is the simulation of a macroeconometric model of the Australian economy in the interwar period. The model involved in these simulations is a version of the one described in Valentine (1978).

In the first section, the path of the depression in Australia is described and compared with developments in other countries. Attention is focused on two other countries—Argentina and Canada—which at the time were

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similar in many respects to Australia. In the second section, the terms of the "debate" on the causes of the depression are outlined. The discussion is restricted to recent contributions, although to a considerable extent these arguments mirror the disagreements which occurred at the time over the causes of the economic contraction in Australia. The structure of the econometric model used in the simulations is discussed in the third section, and the simulations are reported in the fourth section which also includes a discussion of the implications of the results.

1. THE DEPRESSION IN AUSTRALIA—SOME COMPARISONS

A comprehensive discussion of the depression period in Australia is given in Schedvin (WOa), but Fig. 1 gives an idea of general developments over that period. It shows the percentage of trade union members unemployed over the period between the two world wars. The data were collected for the months of February, May, August, and November in the period 1913 to 1942. There are some difficulties with the series which are discussed by Forster (1965). For example, the data for Queensland appear to underestimate the unemployment rate. Nevertheless, the series is accurate enough to be used as an indicator of the fluctuations in the Australian economy in the inter-war period. One advantage of the trade union series is that it is available on a quarterly basis. This is a minimum requirement of an indicator series which is to be used to throw some light on the timing of various economic events.

Figure 1 shows that unemployment fluctuated to a considerable extent over the 1920s. It peaked at around 9.6% in mid-1922 and 10.2% in the June quarter of 1925, but by the December quarter of 1926 it had fallen to 5.7%. It increased sharply in the June quarter of 1929 and then remained quite high throughout the thirties. The figure clearly shows the depth of the depression.

The depression in Australia was deeper than in most other countries.

![Fig. 1. Australian unemployment rate (%) for years shown.](image-url)
It is true that the data given by Twomey (1983) show that the contraction of income in Australia was less than that in most other countries. However, Schedvin (1970b), who compares the Australian experience with that of the United States, Canada, Poland, Germany, the United Kingdom, and Japan, argues that the fall in real gross national expenditure is a better indicator of the depth of the depression than is the fall in real national product because the former excludes exports and includes imports. As is discussed below, Australian exports were maintained at a fairly high level during the early part of the depression, but their inclusion could give a misleading impression of the extent to which Australians suffered from the depression.

Schedvin's figures show that of the countries he considered, Australia's contraction in GNE was similar to that which occurred in the United States and Germany although it was less than that which occurred in Canada. It was greater than the contraction of GNE in the other countries mentioned. Schedvin also examined the rates of unemployment in the seven countries in question and found that the average rate over the period 1930 to 1934 was higher in Australia than in all the other countries except Germany.

These comparisons make it clear that the depression affected Australia more drastically than it did most countries. However, as Twomey (1985) argues, a more revealing comparison is with countries such as Canada and Argentina which had characteristics similar to those of Australia. The importance of this comparison is also stressed for Australia and Canada by Green and Sparks (1985) and for Australia and Argentina by Duncan and Fogarty (1984).

Twomey notes the characteristics which these countries had in common in 1929. First, exports constituted a similar proportion of their GDP—around 20%. Second, a similar proportion of their GDP (that is, around 20%) arose from industrial production. Third, all three were dependent on high levels of capital inflow.

These countries could be described as small open economies. Since they were heavily dependent on exports and capital inflow, the depression in the international economy was bound to have a powerful contractionary effect on them. Indeed, as noted above, Australia and Canada had worse experiences than did most European countries and the United States.

Nevertheless, the countries did not suffer to the same degree. Twomey (1985, p. 181) points out that after 1929, output declined by 9% in Australia, by 14% in Argentina, and by 30% in Canada. Green and Sparks (1985) also note that Canada's performance was inferior to that of Australia in the early part of the depression.

Some important aspects of this latter comparison are indicated by Table 1. It is clear that the contraction of income during the depression was much greater in Canada than in Australia. Table 1 shows, however, that
### TABLE 1
Rates of Growth of Real Income and Real Nonfarm Income and Unemployment Rates in Australia and Canada (1927/1928–1932/1933)

<table>
<thead>
<tr>
<th>Year</th>
<th>Australia GDP (%)</th>
<th>Nonfarm GDP (%)</th>
<th>Unemployment rate (%)</th>
<th>GNE Nonfarm income (%)</th>
<th>Canada Unemployment rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927/1928</td>
<td>-1.2</td>
<td>0.6</td>
<td>6.2</td>
<td>9.8</td>
<td>9.8</td>
</tr>
<tr>
<td>1928/1929</td>
<td>-0.5</td>
<td>-3.5</td>
<td>6.7</td>
<td>2.8</td>
<td>5.0</td>
</tr>
<tr>
<td>1929/1930</td>
<td>0.2</td>
<td>-2.4</td>
<td>9.8</td>
<td>-4.4</td>
<td>-4.0</td>
</tr>
<tr>
<td>1930/1931</td>
<td>-8.1</td>
<td>-11.2</td>
<td>16.4</td>
<td>-12.8</td>
<td>-9.2</td>
</tr>
<tr>
<td>1931/1932</td>
<td>-0.5</td>
<td>-4.9</td>
<td>19.7</td>
<td>-10.4</td>
<td>-11.6</td>
</tr>
<tr>
<td>1932/1933</td>
<td>6.2</td>
<td>8.8</td>
<td>18.3</td>
<td>-6.6</td>
<td>-6.0</td>
</tr>
</tbody>
</table>

**Source:** The series were obtained from Butlin (1985). The details are as follows:

- **Australia—GDP:** column (o) of Table Aa4a. nonfarm GDP: column (o) of Table Aa4a minus columns (a), (b), and (d) of the same table. unemployment rate: column (f) of Table Aa33.
- **Canada—GNE:** column (j) of Table C8. Column (a) of Table C3 has been used to deflate the series. nonfarm income: column (j) of Table C8 minus column (a). The same deflator has been used. unemployment rate: column (i) of Table C18 divided by column (e).

The Australian case has some unique characteristics. Farm output was maintained at relatively high levels by a series of good seasons and by such government actions as the "grow more wheat" campaign. This meant that the contraction in nonfarm income was actually much greater than the fall in GDP. A similar situation did not apply in Canada. Nevertheless, even when this factor is taken into account, it is clear that the post-1929 contraction was greater in Canada than in Australia.

Green and Sparks (1985) explain this difference in terms of the economic conditions in the major trading partners of the two countries. Canada's major trading partner (the United States) suffered more than did Australia's major trading partner (the United Kingdom). Hence Australia's exports held up better than did Canada's exports.

Another explanation, hinted at by Green and Sparks (1985) and stated more directly by Duncan and Fogarty (1985, p. 26), is that the Australian economy had already contracted prior to 1928/1929 and therefore had less distance to go down. This question is discussed in the following section, but two comments can be made on it here. First, the view seems to be supported by the data in Table 1. Figure 1, however, indicates that because the unemployment rates in the table are taken at the end of the year, the fact that the Australian economy was undergoing something of a recovery at the onset of the depression is hidden.
2. THE DEBATE OVER THE CAUSES OF THE DEPRESSION IN AUSTRALIA

The point discussed at the end of the previous section raises the question of the impact of domestic factors on the depth of the depression in Australia. There is some disagreement over this subject in the literature and Clark (1981) has labeled this disagreement a "debate." It arises out of the work of Schedvin (1970a, b) and the review of the first of these by Boehm (1973). A further exchange occurred between Sinclair (1975) and Boehm (1975). The arguments of this debate are briefly but well summarized by Clark (1981).

The difficulty with the debate is in detecting the differences in the protagonists' positions. There is agreement that the downturn which, according to the trade union unemployment figures, began in the June quarter of 1929, was precipitated by external factors. One of these was a fall in export income. Export prices fell by 7.7% in 1928/1929 and by 22.7% in 1929/1930. This fall reflected the contraction in the world economy, but export prices were also affected by longer-term structural problems, e.g., an oversupply of foodstuffs in the world (Schedvin (1970a, Chap. 11).

The contraction of exports created balance of payments difficulties because Australia had borrowed overseas extensively in the twenties and this had increased debt-servicing commitments. The interest payable on securities held overseas increased from $33 million in 1920/1921 to $57 million in 1928/1929. As a standard of comparison, exports in 1928/1929 were $308 million (see Butlin, 1977). At the same time that exports fell, the sources of overseas loans dried up. It was therefore impossible for Australia to meet its interest payments out of additional borrowings as it had done in many years in the twenties, and it was necessary for the country to run a balance of trade surplus to meet its commitments.

The differences among the writers mentioned above appear to arise in their evaluation of the role of domestic factors in bringing on and increasing the severity of the depression. In particular, Boehm (1973) claims that Schedvin's (1970a) analysis puts too great an emphasis on domestic factors. This criticism may be a little unfair because Schedvin was to some extent correcting a bias toward external factors which he found in earlier work. Nevertheless, there does appear to be a real difference between Schedvin and Boehm over the weight which should be attached to domestic influences on the depression. Certainly Sinclair (1975) appears to argue that domestic factors must bear a great deal of the blame for the severity of the depression. As noted above, this also appears to be the view of Duncan and Fogarty (1984).

The domestic factors in question are:

(i) The structural problems which had developed in the Australian
economy as a result of the system of tariffs that protected an increasingly uncompetitive manufacturing industry.

(ii) The high rate of growth of nominal wages in the twenties (real wages increased during this time) which had a direct effect on unemployment (see Valentine, 1978; Pope, 1982) and reduced the competitiveness of Australian products relative to those of the United Kingdom (see Jonson and Stevens, 1983).

(iii) The rate of growth of public investment which faltered at the end of the twenties and would have produced an economic contraction by itself (see Sinclair, 1975).

Some comments should be made about the second of these factors. It is true that real wages increased in the 1920s but, as Table 2 shows, most of this increase occurred over the period 1919/1920 to 1921/1922 when real wages went up by 37.6%. This increase was reflected in a fall in the competitiveness of the Australian economy (see Jonson and Stevens, 1983). The indexes of the real effective exchange rate constructed by McKenzie (1982) increased over the same period; the version based on trade weights and the wholesale price index increased by 27.6%. Little change in either measure occurred through the remainder of the twenties. In particular, real wages fell between 1927/1928 and 1928/1929, a fact which raises some doubt about the role of real wages in precipitating the depression.

**TABLE 2**
Real Wages and the Real Effective Exchange Rate in Australia
(1918/1919–1931/1932)

<table>
<thead>
<tr>
<th>Year</th>
<th>RW</th>
<th>RWT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1918/1919</td>
<td>0.418</td>
<td>78.0</td>
</tr>
<tr>
<td>1919/1920</td>
<td>0.399</td>
<td>77.9</td>
</tr>
<tr>
<td>1920/1921</td>
<td>0.481</td>
<td>89.7</td>
</tr>
<tr>
<td>1921/1922</td>
<td>0.549</td>
<td>99.4</td>
</tr>
<tr>
<td>1922/1923</td>
<td>0.524</td>
<td>112.0</td>
</tr>
<tr>
<td>1923/1924</td>
<td>0.545</td>
<td>105.4</td>
</tr>
<tr>
<td>1924/1925</td>
<td>0.529</td>
<td>110.4</td>
</tr>
<tr>
<td>1925/1926</td>
<td>0.547</td>
<td>114.2</td>
</tr>
<tr>
<td>1926/1927</td>
<td>0.562</td>
<td>115.7</td>
</tr>
<tr>
<td>1927/1928</td>
<td>0.562</td>
<td>114.3</td>
</tr>
<tr>
<td>1928/1929</td>
<td>0.549</td>
<td>119.9</td>
</tr>
<tr>
<td>1929/1930</td>
<td>0.610</td>
<td>118.2</td>
</tr>
<tr>
<td>1930/1931</td>
<td>0.616</td>
<td>101.4</td>
</tr>
<tr>
<td>1931/1932</td>
<td>0.602</td>
<td>100.5</td>
</tr>
</tbody>
</table>

*Source:* Real wages were obtained by dividing average weekly earnings by the deflator for gross domestic product. Both of these series were obtained from Butlin (1977). The series RWT is the real effective exchange rate (with trade weights and using the wholesale price index) constructed by McKenzie (1982).
Boehm did not, however, discuss these factors in detail. Rather his views on their importance are most clear in his criticism of Schedvin’s suggestion that the recession in 1927/1928 continued into 1929, when it was reinforced by the external factors which turned it into the depression (Boehm, 1973, p. 614). As noted above, this view has been expressed more recently by Green and Sparks (1985) and by Duncan and Fogarty (1984). Boehm argues that the economy was picking up in 1928/1929 and that the worsening of international economic conditions was a “shock” which imposed an unusual contraction on Australia’s normal pattern of short business cycles. The significance of this difference is that Boehm’s view implies that Australian economic conditions would have continued improving in the absence of external pressures (at least until the peak of the normal business cycle was reached), whereas Schedvin’s view suggests that there would have been economic difficulties in the early thirties even if the international economy had not contracted.

3. THE MODEL

The equations of the model are set out in Table 3. Unless otherwise stated they have been estimated by ordinary least squares. The model is basically Keynesian because of its emphasis on aggregate demand, but the wage/price/employment sector is neoclassical in form. The specification of most of the equations is discussed in Valentine (1978), but it would be worthwhile to make some brief comments about them here.

The consumption equation includes an income variable which is defined as the product of average earnings and employment (deflated with the GDP deflator): it is therefore a measure of real wage income. This variable has been included because one of the objectives in the construction of the model was to examine the effect of wages on economic activity. The other variable in the equation is the ratio of export prices to average earnings. The purpose of this variable is to measure the income generated by exports. The objective in including this ratio was to provide a channel through which developments in the export sector could have an indirect effect on economic activity which is additional to their direct effect. In spite of the adoption of this additional criterion in choosing the variables to be included, the equation’s performance is quite good. The export price variable is highly significant and, as is seen below, the equation performed well in simulation tests.

The investment equation is based on the approach used in Valentine (1980b) in which the rate of investment depends on the ratio of the value of existing capital to its replacement cost. The former variable is represented by the variables (prices, wages, cost of capital, interest rates, and tax rates) which determine it. The reciprocal of the unemployment rate has been included in the equation as a measure of excess capacity. When
TABLE 3  
A Model of the Australian Economy (1920/1921 to 1938/1939)

Consumption

\[
\log \left( \frac{\text{CON}}{P} \right) = 1.77 + 0.333 \log \left( \frac{\text{AE.TE}}{P} \right) + 0.221 \log \left( \frac{\text{PEX}}{\text{AE}} \right) + 0.0135 \text{TME} + 0.109 \text{D30} \\
(1.50) \quad (2.15^*) \quad (4.61**) \quad (5.03^*) \quad (2.65**) \quad (3.1)
\]

\[ R^2 = 0.878, \quad d = 2.35, \quad \text{SE} = 0.036 \]

Gross private capital formation

\[
\frac{\text{GPCF}}{\text{PI}} = -5.60 + 2.85 \frac{\text{P(I-T)}}{\text{RGS.PI}} - 10.7 \frac{\text{AE(I-T)}}{\text{RGS.PI}} - 7.27 \frac{\text{C(i-Z')}}{\text{RGS.PI}} + 0.573 \frac{\text{GPCF}}{\text{PI}}_{-1} + 60.6' \frac{\text{UR}}{\text{UR}} \\
(0.86) \quad (2.72**) \quad (0.60) \quad (1.05) \quad (5.94**) \quad (3.39**) \quad (3.2)
\]

\[ R^2 = 0.937, \quad \text{SE} = 2.64, \quad \text{DS} = -0.03 \]

Imports

\[
\frac{\text{IMP}}{\text{PM}} = -3.45 + 0.0063 \frac{\text{GDP}}{\text{P}} + 138.8 \frac{\text{P}}{\text{PM}} - 0.0523 \text{TME} \\
(8.85**) \quad (5.62**) \quad (6.45**) \quad (7.24**) \quad (3.3)
\]

\[ R^2 = 0.919, \quad d = 2.08, \quad \text{SE} = 0.094 \]

Exports

\[
\frac{\text{EXP}}{\text{PEX}} = 0.913 + 0.0003 \frac{\text{PEX}}{\text{AE}} - 0.007 \frac{\text{PEX}}{\text{ER.PUK}} + 0.0002 \text{UKY} \\
(3.45*) \quad (1.25) \quad (5.14**) \quad (4.23**) \quad (3.4)
\]

\[ R^2 = 0.881, \quad d = 1.99, \quad \text{SE} = 0.095 \]

Implicit deflator for gross domestic product (P)

\[
\log P = -3.99 + 0.375 \log W + 0.443 \log \text{NNP} - 0.008 \text{TME} \\
(14.49**) \quad (4.46**) \quad (11.39**) \quad (9.07**) \quad (3.5)
\]

\[ R^2 = 0.977, \quad d = 2.66, \quad \text{SE} = 0.016 \]

Implicit deflator for gross private capital formation (PI)

\[
\log \text{PI} = 0.604 + 0.405 \log \text{AE} + 0.178 \log \text{PM} + 0.0035 \text{TME} - 0.0012 \text{UR} \\
(3.67**) \quad (7.30**) \quad (4.82**) \quad (3.35**) \quad (1.20) \quad (3.6)
\]

\[ R^2 = 0.923, \quad d = 2.00, \quad \text{SE} = 0.014 \]

Import prices

\[
\log \text{PM} = 3.56 + 1.32 \log \text{PUK} + 0.198 \log \text{ER} - 0.0073 \text{TME} + 0.248 \log \text{PM}_{-1} \\
(8.20**) \quad (8.77**) \quad (1.56) \quad (2.00) \quad (2.83**) \quad (3.7)
\]

\[ R^2 = 0.982, \quad \text{DS} = -0.21, \quad \text{SE} = 0.025 \]
TABLE 3—Continued

Average earnings (1921/1922 to 1938/1939)

\[
\log (AE/P) = -6.17 + 0.949 \log (W/P) + 0.086 \log (C/P) + 0.047 \log P
\]

\[
(13.72**) \quad (10.32**) \quad (1.77) \quad (0.87)
\]

\[R^2 = 0.954, \quad d = 1.81, \quad SE = 0.011\]

Unemployment rate

\[
\log UR = 7.91 + 2.464 \log (W/P) - 2.785 \log (GNP/P) + 0.059 \text{TME}
\]

\[
(0.91) \quad (2.59**) \quad (2.84**) \quad (2.76**)
\]

\[+ 0.342 \log UR_{-1} - 0.335 \text{D27}
\]

\[
(2.85**) \quad (2.45*)
\]

\[R^*_2 = 0.961, \quad DS = 0.23, \quad SE = 0.125\]

Demand for notes and coin

\[
NC = 3.54 + 0.00989 \text{NNP} - 346.9 \text{R6} + 169.3 \text{RGS} + 0.793 \text{NC}_{-1}
\]

\[
(0.80) \quad (2.88**) \quad (4.99**) \quad (3.74**) \quad (6.22**)
\]

\[R^2 = 0.951, \quad DS = 0.57, \quad SE = 0.972\]

Demand for trading bank deposits

\[
TBD = 143.3 + 0.128 \text{NNP} - 1667 \text{R6} + 0.482 \text{TBD}
\]

\[
(3.94**) \quad (3.31**) \quad (4.09**) \quad (3.91**)
\]

\[R^2 = 0.907, \quad DS = -0.57, \quad SE = 10.7\]

Demand for savings bank deposits

\[
SBD = 62.0 + 0.0526 \text{NNP} - 605 \text{RGS} + 0.685 \text{SD}_{-1}
\]

\[
(3.81**) \quad (4.22**) \quad (4.58**) \quad (12.91**)
\]

\[R^2 = 0.972, \quad SE = 4.75, \quad DS = 0.56\]

Savings bank advances

\[
SBA = -43.6 + 0.261 \text{SBD} + 136 \text{RGS} + 0.710 \text{SBA}_{-1} - 0.923 \text{TME} + 0.381 \text{UR}
\]

\[
(3.35**) \quad (3.23**) \quad (2.49**) \quad (4.06**) \quad (3.14**) \quad (1.20)
\]

\[R^2 = 0.851, \quad DS = 0.99, \quad SE = 1.23\]

Demand by public for AGS

\[
AGS/P = -72.9 + 0.387 \text{NNP} + 0.499 \text{(AGS/P)}_{-1} + 4.53 \text{UR}
\]

\[
(1.86) \quad (2.74**) \quad (3.72**) \quad (3.88**)
\]

\[R^2 = 0.979, \quad DS = -0.10, \quad SE = 8.74\]

Taxes

\[
\text{TAX} = -50.4 + 0.133 \text{GNP} + 0.321 \text{GTI}
\]

\[
(5.28**) \quad (12.38**) \quad (15.72**)
\]

\[R^2 = 0.952, \quad d = 1.39, \quad SE = 4.23\]
TABLE 3—Continued

Benefits and subsidies

\[
BENS = -24.3 + 0.0435 \text{ GNP} + 1.438 \text{ UR} + 0.682 \hat{U}_{t-1} \\
(1.79) \quad (2.73^{**}) \quad (4.87^{**}) \quad (2.10^{*})
\]
\[R^2 = 0.891, \quad d = 1.92, \quad SE = 2.54\] (3.16)

Gross domestic product

\[
\text{GDP} = \text{CON} + \text{GPCF} + \text{PCF} - \text{IMPS} + \text{EXP} + Z_t
\] (3.17)

Gross national product

\[
\text{GNP} = \text{GDP} + Z_2
\] (3.18)

Net national product

\[
\text{NNP} = \text{GNP} + Z_3
\] (3.19)

Foreign reserves

\[
\Delta R = \text{EXP} - \text{IMP} + \Delta \text{OS} + Z_4
\] (3.20)

Primary liquidity

\[
\Delta \text{PL} = \Delta R + \text{PCF} + \text{BENS} - \text{TAX} - \Delta \text{OS} + Z_5
\] (3.21)

Trading bank advances

\[
\text{TBA} = \text{NC} + \text{TBD} + \text{SBD} - \text{SBA} + \text{AGS} - \text{PL} + Z_6
\] (3.22)

Total employment

\[
\text{TE} = (1 - \text{UR}) \cdot \text{WF}
\] (3.23)

Cost of capital

\[
C = \text{PI}(0.08 + \text{OR})
\] (3.24)

Notes to Table 3

(i) \(R^2\) is the coefficient of determination, \(SE\) is the standard error of the regression, \(d\) is the Durbin–Watson statistic, and \(DS\) is the statistic developed by Durbin (1970) to test for first-order autocorrelation when the equation includes a lagged dependent variable. The coefficient of \(\hat{U}_{t-1}\) is the estimated first-order autocorrelation coefficient.

(ii) The figures under the coefficients are \(t\) values and the asterisks indicate the degree of significance of the coefficients. One asterisk indicates significance at the 5% level and two asterisks indicate significance at the 1% level.

Variables and Data Sources

Unless otherwise stated, the series used are from Butlin (1962).

Endogenous variables.

\begin{align*}
\text{AE} & \quad \text{Average earnings; obtained from Butlin (1977)} \\
\text{AGS} & \quad \text{Non-bank holdings of Australian government securities; obtained from Butlin (1977)} \\
\text{BENS} & \quad \text{Benefits and subsidies; obtained from Butlin (1977)} \\
\text{C} & \quad \text{Cost of capital}
\end{align*}
Other non-government expenditure. This is calculated as 
\( (GDP - EXP + IMP - GPCF - PCF - GS) \). GS is government services.

Exports of goods and services; obtained from McLean (1968)

Gross domestic product

Gross national product

Gross private capital formation

Imports of goods and services; obtained from McLean (1968)

Notes and coin in the hands of the public; obtained from Butlin et al. (1971)

Net national product

Implicit deflator for gross domestic product

Implicit deflator for gross private capital formation

Primary liquidity

Import price index; obtained from Bambrick (1973)

International reserves; obtained from Butlin (1977)

Advances (mortgage plus other) of savings banks; obtained from Butlin et al. (1971)

Deposits with savings banks; obtained from Butlin et al. (1971)

Taxes; the sum of income taxes and indirect taxes obtained from Butlin (1977)

Advances of trading banks; obtained from Butlin et al. (1971)

Deposits with trading banks; obtained from Butlin et al. (1971)

Total employment; obtained from Barnard et al. (1977)

Unemployment rate; unemployment divided by the total workforce. Both series were obtained from Barnard et al. (1977)

**Exogenous Variables**

Di Dummy variable which takes the value unity in the year ending June 19i, and zero otherwise

ER Exchange rate A/Stg; obtained from Butlin et al. (1971)

GT1 General tariff index; obtained from Carmody (1952)

OR Maximum Overdraft rate; obtained from Butlin et al. (1971)

OS Australian government securities held overseas; obtained from Butlin (1977)

PCF Public Capital formation

PEX Export price index; obtained from Bambrick (1973)

PUK Implicit deflator for UK NNP; obtained from Feinstein (1972)

R6 Rate paid on six month deposits; obtained from Butlin et al. (1971)

RGS Yield on long-term government bonds; obtained from the *Statistical Bulletin (Banking Supplement)*. Commonwealth Bank of Australia, May, 1954.

T Company tax rate; the sum of the NSW and Commonwealth Company tax rates. The NSW rate was obtained from various issues of the *NSW Year Book* and the Commonwealth figures were obtained from various issues of the *Commonwealth Year Book*.

TME Time trend

UKY UK NNP (1938 prices); obtained from Feinstein (1972)

W Weighted average nominal weekly wage rate of an adult male

WF Workforce; obtained from Barnard et al. (1977)

\( Z_1, Z_2, Z_3, Z_4, Z_5, Z_6 \) Exogenous variables calculated from identities (3.17), (3.18), (3.19), (3.20), (3.21), and (3.22)
there is pressure on capacity, there will be an incentive to invest in new capital equipment.

The model reported in Valentine (1980a) explains employment and then unemployment is calculated as the difference between the work force and employment, both of which are endogenous variables. However, more accurate predictions of the unemployment rate can be obtained by estimating a single equation explaining it. The variables included in the equation were chosen on the basis of those appearing in the relevant equations of the model reported by Valentine (1980a). It should also be noted that the unemployment data used in the estimation of the model are those from Barnard et al. (1977) and not from the trade union unemployment series.

Equations (3.10), (3.11), and (3.12) explain the demand for three components of the volume of money—notes and coin, deposits with trading banks, and deposits with savings banks. The equations have been estimated in nominal rather than real terms which means that money illusion has been built into the equations. Equation (3.13) explains the advances of savings banks. It is a reduced-form equation which combines both demand and supply elements. Advances of trading banks are determined by the identity (3.22).

The model set out in Table 3 is block recursive because the monetary sector, while affected by variables determined in the real sector, does not influence the real sector in turn. This comment, of course, assumes that the monetary equations determine the demand for the monetary asset in question and not interest rates. If it were assumed that the authorities determined the monetary aggregates, interest rates would be endogenous and would provide a link between the real and monetary sectors of the model. In fact all writers on the Australian economy in the interwar period treat interest rates as exogenous variables. Indeed, interest rates are treated as policy instruments which were under the control of the authorities. There is considerable evidence that the monetary aggregates were in fact demand determined in the interwar period. Schedvin (1970a, pp. 203–210) points out that the Australian money supply did not contract in the depression to the same extent as did the U.S. money supply because the banks showed considerable flexibility with respect to their reserve ratios. Twomey (1983) shows that similar situations occurred in a number of Latin American countries. In some other versions of the model, including the one reported in Valentine (1978), there are links from the monetary to the real sectors. For example, trading bank advances affect imports and savings bank advances influence housing investment.

In the period covered by the model, the Australian exchange rate was fixed. This means that if the Australian economy was indeed open, the authorities were not free to set either the interest rate or the money supply. Stating this point in another way, the model is based on the
assumption that the authorities are able to set both the interest rate (or the money supply) and the exchange rate, whereas in an open economy they can set only one of these magnitudes.

The explanation of this assumption is that the Australian economy was not completely open in the interwar period. There were some constraints on the mobility of capital. For example, as Twomey (1985) notes, most capital inflow arose out of official borrowing; private capital flows were relatively less important. Also, the authorities imposed some limits on gold outflows. This means that the monetary theory of the balance of payments which has given good results in the analysis of the postwar Australian economy\(^1\) provides relatively little assistance in understanding the interwar economy. This, at least, is the conclusion that is indicated by the work of Butlin and Boyce (1985) which shows that the equations suggested by the theory have poor explanatory power when applied to the Australian interwar economy.

The results in Table 4 were obtained from one-period and dynamic simulations of the model given in Table 3. These simulations differ in that in the one-period simulations the actual values of lagged endogenous variables are used, whereas in the dynamic simulation these are replaced by the forecasts generated in earlier periods. These techniques are described in Valentine (1980a, Appendix).

Table 4 shows that the model tracks the major aggregates (GDP, GNP, NNP, and consumption) quite accurately. This is not true of private investment, exports, and imports. The forecasts of the unemployment rate also involve significant errors. In the latter case, however, the forecasts track the actual values fairly well but tend to underpredict the unemployment rate in the early depression years.\(^2\)

4. THE SIMULATIONS

Table 5 records the values of the unemployment rate and gross domestic product, as well as the changes in international reserves, produced by three dynamic simulations which were carried out to examine the effect of a change in export prices and public investment expenditure (PCF) on economic activity in the interwar period. Since only one exogenous variable is varied in each simulation, these experiments allow us to isolate the effect of the variables changed. The predictions of the same endogenous variables produced by dynamic simulation of the original model have also been included in Table 5 for purposes of comparison.

\(^1\) Most notably in the work done by Porter and by Jonson and his colleagues at the Reserve Bank of Australia.

\(^2\) It should be reiterated at this point that the unemployment rate used in the model is the one obtained from Barnard \textit{et al.} (1977) and not the much higher trade union figures used in Fig. 1.
TABLE 4
Simulation Tests of the Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>One-period simulation</th>
<th></th>
<th>Dynamic simulation</th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>RMSE</td>
<td>RMSPE</td>
<td>RMSE</td>
<td>RMSPE</td>
</tr>
<tr>
<td>GDP</td>
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<td>3.39</td>
<td>29.6</td>
<td>3.84</td>
</tr>
<tr>
<td>GNP</td>
<td>26.74</td>
<td>3.58</td>
<td>29.6</td>
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</tr>
<tr>
<td>NNP</td>
<td>26.74</td>
<td>3.85</td>
<td>29.6</td>
<td>4.37</td>
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<tr>
<td>Consumption</td>
<td>24.80</td>
<td>4.15</td>
<td>26.4</td>
<td>4.53</td>
</tr>
<tr>
<td>Gross private capital formation</td>
<td>3.25</td>
<td>11.1</td>
<td>4.25</td>
<td>19.0</td>
</tr>
<tr>
<td>Imports (real terms)</td>
<td>0.16</td>
<td>16.7</td>
<td>0.16</td>
<td>18.1</td>
</tr>
<tr>
<td>Exports (real terms)</td>
<td>0.16</td>
<td>13.1</td>
<td>0.16</td>
<td>13.1</td>
</tr>
<tr>
<td>Implicit deflator for GDP</td>
<td>0.039</td>
<td>2.29</td>
<td>0.040</td>
<td>2.38</td>
</tr>
<tr>
<td>Implicit deflator for GPCF</td>
<td>0.037</td>
<td>1.88</td>
<td>0.037</td>
<td>1.92</td>
</tr>
<tr>
<td>Import prices</td>
<td>2.33</td>
<td>2.14</td>
<td>2.28</td>
<td>2.13</td>
</tr>
<tr>
<td>Average earnings</td>
<td>0.004</td>
<td>2.88</td>
<td>0.004</td>
<td>2.88</td>
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<tr>
<td>Unemployment rate</td>
<td>1.77</td>
<td>15.80</td>
<td>2.79</td>
<td>20.4</td>
</tr>
<tr>
<td>Notes and coin</td>
<td>1.02</td>
<td>3.36</td>
<td>1.54</td>
<td>4.97</td>
</tr>
<tr>
<td>Trading bank deposits</td>
<td>10.88</td>
<td>3.32</td>
<td>12.6</td>
<td>3.80</td>
</tr>
<tr>
<td>Trading bank advances</td>
<td>23.74</td>
<td>9.63</td>
<td>26.1</td>
<td>10.5</td>
</tr>
<tr>
<td>Savings bank deposits</td>
<td>4.31</td>
<td>2.18</td>
<td>4.82</td>
<td>2.43</td>
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<tr>
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<td>2.57</td>
<td>8.86</td>
</tr>
<tr>
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<td>3.62</td>
<td>19.6</td>
<td>6.79</td>
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<tr>
<td>Taxes</td>
<td>5.36</td>
<td>4.90</td>
<td>5.55</td>
<td>5.04</td>
</tr>
<tr>
<td>Benefits and subsidies</td>
<td>2.95</td>
<td>11.10</td>
<td>3.97</td>
<td>13.94</td>
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<td>Total employment</td>
<td>469</td>
<td>2.06</td>
<td>741</td>
<td>3.34</td>
</tr>
</tbody>
</table>

Note. The root mean square is defined as \( \text{RMSE} = \sqrt{\frac{1}{n} \sum (F_i - A_i)^2} \) where \( n \) is the number of observations, \( F_i \) is the simulated value, and \( A_i \) is the actual value of the variable in question. The root mean square percentage error is \( \text{RMSPE} = 100 \sqrt{\frac{1}{n} \sum (F_i - A_i/A_i)^2} \). See Carland (1977, Chap. 8.a).

In the first simulation, export prices were set at the 1928/1929 level (123) throughout the 1930s. This value is, however, considerably lower than those which ruled through most of the twenties. In the second simulation, therefore, export prices have been set at 150 from 1929/1930 on. In the third simulation, public investment expenditure was set at the value for 1927/1928 from 1929/1930 on.

As can be seen from Eq. (3.4) in Table 3, an increase in export prices will have two opposing effects on real exports. If we neglect the positive demand effect, the increase in export prices will actually reduce exports in constant prices. The price elasticity is, however, below unity and an increase in the price therefore leads to an increase in nominal exports. An increase in export prices also has a direct expansionary effect on the economy through its influence on consumption (Eq. (3.1)). The simulations suggest that export prices had a powerful influence on the economy in
## TABLE 5
The Unemployment Rate and Gross Domestic Product in Simulations with Higher Export Prices and Increased Public Investment Expenditure

<table>
<thead>
<tr>
<th>Year</th>
<th>Original model</th>
<th>Simulation 1</th>
<th>Simulation 2</th>
<th>Simulation 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gross domestic product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1928/1929</td>
<td>857</td>
<td>857</td>
<td>857</td>
<td>857</td>
</tr>
<tr>
<td>1929/1930</td>
<td>858</td>
<td>929</td>
<td>983</td>
<td>877</td>
</tr>
<tr>
<td>1930/1931</td>
<td>669</td>
<td>806</td>
<td>863</td>
<td>710</td>
</tr>
<tr>
<td>1931/1932</td>
<td>641</td>
<td>802</td>
<td>872</td>
<td>706</td>
</tr>
<tr>
<td>1932/1933</td>
<td>642</td>
<td>822</td>
<td>899</td>
<td>710</td>
</tr>
<tr>
<td>1933/1934</td>
<td>730</td>
<td>865</td>
<td>950</td>
<td>798</td>
</tr>
<tr>
<td>1934/1935</td>
<td>727</td>
<td>911</td>
<td>1003</td>
<td>784</td>
</tr>
<tr>
<td>1935/1936</td>
<td>811</td>
<td>938</td>
<td>1034</td>
<td>862</td>
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<tr>
<td>1936/1937</td>
<td>905</td>
<td>970</td>
<td>1070</td>
<td>948</td>
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<td>1937/1938</td>
<td>923</td>
<td>1017</td>
<td>1120</td>
<td>954</td>
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<td>1938/1939</td>
<td>879</td>
<td>1033</td>
<td>1138</td>
<td>912</td>
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<td></td>
<td>Unemployment rate</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1928/1929</td>
<td>6.9</td>
<td>6.9</td>
<td>6.9</td>
<td>6.9</td>
</tr>
<tr>
<td>1929/1930</td>
<td>7.7</td>
<td>6.2</td>
<td>5.3</td>
<td>7.3</td>
</tr>
<tr>
<td>1930/1931</td>
<td>13.5</td>
<td>7.4</td>
<td>5.8</td>
<td>11.1</td>
</tr>
<tr>
<td>1931/1932</td>
<td>16.2</td>
<td>7.0</td>
<td>5.1</td>
<td>11.6</td>
</tr>
<tr>
<td>1932/1933</td>
<td>15.9</td>
<td>6.0</td>
<td>4.2</td>
<td>10.7</td>
</tr>
<tr>
<td>1933/1934</td>
<td>11.7</td>
<td>5.2</td>
<td>3.6</td>
<td>8.0</td>
</tr>
<tr>
<td>1934/1935</td>
<td>11.4</td>
<td>4.7</td>
<td>3.1</td>
<td>8.1</td>
</tr>
<tr>
<td>1935/1936</td>
<td>9.1</td>
<td>4.5</td>
<td>3.0</td>
<td>6.9</td>
</tr>
<tr>
<td>1936/1937</td>
<td>7.2</td>
<td>4.7</td>
<td>3.1</td>
<td>5.8</td>
</tr>
<tr>
<td>1937/1938</td>
<td>7.9</td>
<td>5.2</td>
<td>3.5</td>
<td>6.7</td>
</tr>
<tr>
<td>1938/1939</td>
<td>10.8</td>
<td>6.0</td>
<td>4.0</td>
<td>9.2</td>
</tr>
<tr>
<td></td>
<td>Change in foreign exchange reserves</td>
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<td></td>
</tr>
<tr>
<td>1928/1929</td>
<td>-3.6</td>
<td>-3.6</td>
<td>-3.6</td>
<td>-3.6</td>
</tr>
<tr>
<td>1929/1930</td>
<td>-26.3</td>
<td>-28.4</td>
<td>-32.6</td>
<td>-32.6</td>
</tr>
<tr>
<td>1930/1931</td>
<td>-25.8</td>
<td>-23.6</td>
<td>-24.3</td>
<td>-40.5</td>
</tr>
<tr>
<td>1931/1932</td>
<td>-2.1</td>
<td>2.8</td>
<td>6.3</td>
<td>-25.3</td>
</tr>
<tr>
<td>1932/1933</td>
<td>8.7</td>
<td>11.7</td>
<td>14.5</td>
<td>-15.3</td>
</tr>
<tr>
<td>1933/1934</td>
<td>12.4</td>
<td>11.0</td>
<td>13.8</td>
<td>-10.1</td>
</tr>
<tr>
<td>1934/1935</td>
<td>-26.9</td>
<td>-22.7</td>
<td>-20.4</td>
<td>-45.9</td>
</tr>
<tr>
<td>1935/1936</td>
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<td>0.4</td>
<td>1.0</td>
<td>-12.5</td>
</tr>
<tr>
<td>1936/1937</td>
<td>20.2</td>
<td>10.7</td>
<td>10.0</td>
<td>6.8</td>
</tr>
<tr>
<td>1937/1938</td>
<td>-0.7</td>
<td>-4.1</td>
<td>-5.8</td>
<td>-10.3</td>
</tr>
<tr>
<td>1938/1939</td>
<td>-23.0</td>
<td>-20.1</td>
<td>-21.4</td>
<td>-33.6</td>
</tr>
</tbody>
</table>

*Note.* Simulation 1—export prices set at 123 from 1929/1930 on. Simulation 2—export prices set at 150 from 1929/1930 on. Simulation 3—PCF set at the 1921/1928 value from 1929/1930 on.

The interwar period. The final section of Table 5 shows the effect of increased export prices on international reserves. There is a direct positive effect arising from the effect of the expansion in economic activity on imports and there is therefore little net effect on international reserves. The fact that the increase in export prices had such a strong effect on
unemployment and output suggests that public investment expenditure played a secondary role in influencing the path of the Australian economy in the late twenties and early thirties. The third simulation provides further support for this view. Although public investment expenditure has been set at the highest level that it reached in the twenties, the increase does not suffice to remove the contraction. Nevertheless, it is clear that such an increase in government expenditure would have had an expansionary effect. A problem, however, is indicated by the third section of Table 5. A higher level of government investment expenditure would have caused a loss of foreign reserves. Given that reserves were scarce in any case, it is doubtful that such a policy could have been sustained.

One objection which can be made to these simulations is that the wage rate is treated as exogenous. In fact, wages were indexed to prices and any change in the level of economic activity which affected prices would

<table>
<thead>
<tr>
<th>Year</th>
<th>Original</th>
<th>Original with wage equation</th>
<th>Simulation 1</th>
<th>Simulation 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1928/1929</td>
<td>857</td>
<td>929</td>
<td>929</td>
<td>929</td>
</tr>
<tr>
<td>1929/1930</td>
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<td>1001</td>
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<td>1930/1931</td>
<td>669</td>
<td>725</td>
<td>865</td>
<td>926</td>
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<tr>
<td>1931/1932</td>
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<td>689</td>
<td>847</td>
<td>918</td>
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<td>1932/1933</td>
<td>642</td>
<td>692</td>
<td>864</td>
<td>937</td>
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<td>1933/1934</td>
<td>730</td>
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<td>905</td>
<td>985</td>
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<td>1934/1935</td>
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<td>782</td>
<td>952</td>
<td>1036</td>
</tr>
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<td>811</td>
<td>866</td>
<td>978</td>
<td>1064</td>
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<td>923</td>
<td>987</td>
<td>1064</td>
<td>1155</td>
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<tr>
<td>1938/1939</td>
<td>879</td>
<td>944</td>
<td>1087</td>
<td>1179</td>
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</table>

Gross domestic product

Unemployment rate

<table>
<thead>
<tr>
<th>Year</th>
<th>Original</th>
<th>Original with wage equation</th>
<th>Simulation 1</th>
<th>Simulation 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1928/1929</td>
<td>6.9</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>1929/1930</td>
<td>7.7</td>
<td>3.4</td>
<td>2.7</td>
<td>2.3</td>
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<tr>
<td>1930/1931</td>
<td>13.5</td>
<td>7.1</td>
<td>4.4</td>
<td>3.7</td>
</tr>
<tr>
<td>1931/1932</td>
<td>16.2</td>
<td>7.0</td>
<td>4.2</td>
<td>3.4</td>
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<tr>
<td>1932/1933</td>
<td>15.9</td>
<td>6.5</td>
<td>3.8</td>
<td>3.1</td>
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<td>1933/1934</td>
<td>11.7</td>
<td>4.5</td>
<td>3.3</td>
<td>2.7</td>
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<tr>
<td>1934/1935</td>
<td>11.4</td>
<td>4.8</td>
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<tr>
<td>1935/1936</td>
<td>9.1</td>
<td>3.8</td>
<td>3.0</td>
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<td>1936/1937</td>
<td>7.2</td>
<td>3.1</td>
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<td>1937/1938</td>
<td>7.9</td>
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<tr>
<td>1938/1939</td>
<td>10.8</td>
<td>4.4</td>
<td>3.1</td>
<td>2.6</td>
</tr>
</tbody>
</table>

*Note.* Simulation 1—export prices set at 123 from 1929/1930 on in the model in which wages increase by the percentage increase in prices in the previous year. Simulation 2—as in simulation 1 but with export prices set at 150 from 1929/1930 on.
also have caused a change in wages. This may in turn have reduced the stimulatory effect of a given policy. In order to test this possibility, the model has been simulated with an additional equation which makes the percentage increase in $W$ dependent on the percentage increase in $P$ in the previous year. The results for gross domestic product and the unemployment rate are shown in Table 6. Comparison with the original simulation (first column) shows that this rule would have been expansionary. The reason for this is that the lag of 1 year which is assumed is longer than that which actually applied. That is, wages have actually been reduced in this simulation.

The third and fourth columns of Table 6 show the effect of increasing export prices in this extended model to the values used in Table 5. The addition of a “wage indexation” rule has not altered the conclusion that an increase in export prices would have had a strong expansionary effect on the economy.

Another possible objection to the simulation experiments is that the data incorporate some antidepression policies which would not have been introduced if export prices had been at the levels assumed in Table 5. The major elements of the package of policies introduced during the depression were reductions in wages, interest rates, and government expenditure, and devaluation of the Australian pound relative to Sterling. These policies probably had a net expansionary effect on the economy (Valentine, 1978).

In order to examine this possibility, the model has been simulated with these policy changes restored, and the results are given in Table 7. The changes incorporated in the first simulation are:

- export prices have been set at their 1928/1929 value (123) throughout the 1930s;
- the exchange rate has been set at 1 Australian pound to 1 pound Sterling over the period 1930/1931 to 1938/1939;
- interest rates have been increased by one percentage point in the period 1931/1932 to 1938/1939;
- wage rates ($w$) have been increased by 10% over 1930/1931 to 1938/1939; and
- $Z_1$ has been increased by 12 and $Z_5$ has been increased by 22.

In the second simulation reported in Table 7, the same changes were made except that the exchange rate was allowed to take its actual value.

The results show a smaller impact of the increased export prices, probably because of the increased wage levels. Valentine (1978) shows that the level of wages is an important determinant of economic activity in this model.

Nevertheless, these simulations also indicate the importance of export prices in transmitting the depression to Australia. It should be noted that
TABLE 7
The Unemployment Rate and Gross Domestic Product in Simulations with Higher Export Prices

<table>
<thead>
<tr>
<th>Year</th>
<th>Original model</th>
<th>Simulation 1</th>
<th>Simulation 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gross domestic product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1929/1930</td>
<td>858</td>
<td>929</td>
<td>929</td>
</tr>
<tr>
<td>1930/1931</td>
<td>669</td>
<td>791</td>
<td>800</td>
</tr>
<tr>
<td>1931/1932</td>
<td>641</td>
<td>773</td>
<td>796</td>
</tr>
<tr>
<td>1932/1933</td>
<td>642</td>
<td>779</td>
<td>803</td>
</tr>
<tr>
<td>1933/1934</td>
<td>731</td>
<td>805</td>
<td>832</td>
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<tr>
<td>1934/1935</td>
<td>727</td>
<td>842</td>
<td>870</td>
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<tr>
<td>1935/1936</td>
<td>811</td>
<td>864</td>
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<tr>
<td>1936/1937</td>
<td>905</td>
<td>892</td>
<td>922</td>
</tr>
<tr>
<td>1937/1938</td>
<td>923</td>
<td>935</td>
<td>966</td>
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<tr>
<td>1938/1939</td>
<td>879</td>
<td>950</td>
<td>981</td>
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<tr>
<td>Unemployment rate</td>
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<tr>
<td>1929/1930</td>
<td>7.7</td>
<td>6.2</td>
<td>6.2</td>
</tr>
<tr>
<td>1930/1931</td>
<td>13.5</td>
<td>9.8</td>
<td>9.5</td>
</tr>
<tr>
<td>1931/1932</td>
<td>16.2</td>
<td>10.9</td>
<td>9.9</td>
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<tr>
<td>1932/1933</td>
<td>15.9</td>
<td>10.3</td>
<td>9.1</td>
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<td>1933/1934</td>
<td>11.7</td>
<td>9.7</td>
<td>8.5</td>
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<tr>
<td>1934/1935</td>
<td>11.4</td>
<td>9.0</td>
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<td>1935/1936</td>
<td>9.1</td>
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<tr>
<td>1936/1937</td>
<td>7.2</td>
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<td>1937/1938</td>
<td>7.9</td>
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<td>1938/1939</td>
<td>10.8</td>
<td>12.1</td>
<td>10.6</td>
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</table>

Note. Simulation 1—export prices set at 123; the exchange rate set at 1 Australian pound to 1 pound Sterling from 1930/1931 on; interest rates increased by one percentage point from 1931/1932 on; and Z, increased by 12 and Z4 increased by 22. Simulation 2—as in simulation 1 but with the exchange rate set at its actual value.

The value assumed for export prices in the simulation is a good deal lower than the values which applied through most of the twenties.

The cyclical pattern exhibited by the results in Tables 5 and 7 also is of considerable interest. Such results show that with increased export prices or government investment expenditure, economic activity would have expanded in 1928/1929, but that it would then have fallen in 1929/1930. The cycle reaches a trough in 1930/1931 and a recovery occurs in 1931/1932. This pattern is consistent with Boehm's view, discussed above, that the depression was imposed by outside factors on Australia's normal business cycle. If this view is accepted, it suggests that the upturn which occurred in 1931/1932 was due, to some extent at least, to the stimulus provided by the upturn which occurred in the basic domestic business cycle.

5. CONCLUSION

The simulations reported in this paper throw some light on the debate over the causes of the depression in Australia. This debate is over the
relative importance of domestic and international factors in determining
the depth of the contraction. The simulation results were obtained from
an econometric model of the Australian economy in the interwar years
in which export prices and government investment expenditure were
increased above the values they took in the 1930s.

The results suggest that an increase in export prices would have led
to a significant improvement in the performance of the economy, and
they therefore have two important implications. First, they support Boehm's
(1973) view that the depression can be regarded as an unusual economic
fluctuation imposed on Australia's normal business cycle from overseas
sources. Second, the results suggest that export prices were the major
influence at the beginning of the Australian depression, underlining the
extent to which the Australian economy was dependent on exports in
the interwar period. Other factors which have been mentioned in previous
discussions of the origin of the depression—the drying up of capital inflow
and the reduction in public investment—appear to have been of secondary
importance.

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