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By

Taxation on the Australian Economy

An Empirical Analysis of the Effects of a Change in the Mix of Direct and Indirect

Project Impact
REFERENCES


would then be only 0.07 per cent. The maximum prediction in percent (for industry 33, shop and service) would be 0.57 per cent. Another effect would be the reduction of the output of the other industries, thereby lowering productivity. And the final adjustment would be the further reduction of the output of the other industries, thereby lowering productivity.

In 1923, the effect of the Great Depression on the economy was significant. The United States entered the Great Depression in 1929, following the Wall Street Crash of October 29, 1929. The depression lasted until the end of World War II in 1945.

1. The impact of the Great Depression on the United States economic system and society was profound. The Depression caused a significant decline in the gross national product (GNP) and personal income. Unemployment rose dramatically, and many businesses failed. Additionally, the stock market crashed, leading to a loss of wealth for many investors. The Depression also had a significant impact on international trade, as countries reduced their imports to save money and reduce debt.

2. One of the most significant effects of the Great Depression was the rise of radical political movements. The collapse of the stock market and the large-scale unemployment created a fertile ground for radical ideas. The Communist Party of the United States, in particular, saw its membership grow significantly.

3. The Great Depression also had a profound impact on the political landscape of the United States. The election of Franklin D. Roosevelt in 1932 marked a turning point in American politics. Roosevelt's New Deal program aimed to provide relief, recovery, and reform. The program included measures such as the creation of the Social Security Administration and the establishment of the Federal Deposit Insurance Corporation (FDIC), which helped to stabilize the financial system and prevent future crashes.

4. The Great Depression also led to significant changes in the way that the government approached economic policy. The government began to play a more active role in the economy, providing direct assistance to individuals and businesses in times of need. This was a departure from the previous laissez-faire approach, where the government limited its role in economic matters.
In discussions of taxation policy\(^2\), the objectives of equity, efficiency and simplicity are generally considered to be important. It is argued, in particular, that economic efficiency requires a taxation system to be neutral in its effect on the allocation of resources. In this paper, we present some empirical evidence on the likely allocative effects, together with their implications for inflation, unemployment and the balance of trade, of a change in the mix of direct and indirect taxation.

Specifically, we consider an increase in commodity taxes which raises the wholesale prices of all manufactured inputs to household consumption by 2.5 per cent. Such an increase is roughly equivalent to the measures proposed (but never implemented) in the 1981/82 Federal Budget. We wish to simulate the effects of a change in the mix, as opposed to the level, of taxation. Hence the increase in commodity taxes must be accompanied by a reduction in direct taxes that can be considered equivalent in some sense. We have chosen to reduce PAYT taxes by an amount which maintains the real value of total disposable income.\(^3\)

The analysis is based on simulations using the ORANI multi-sectoral model of the Australian economy.\(^4\) Section 2 of the paper contains a discussion of some important features of the macroeconomic environment in which the change in the tax mix is assumed to occur. The results of the simulations are described in detail in sections 3 (for macro effects) and 4 (for structural effects), and summarized, together with the main conclusions of the analysis, in section 5.

For scenario B, pre-tax real wages fall by 1.09 per cent, significantly reducing the impact of the wage-price spiral. Pre-tax money wages rise by only 0.43 per cent (compared with 3.06 per cent for scenario A), but the consequent domestic inflation is still the most important influence on industry performance, and the results of the two scenarios are qualitatively similar.

If industrial relations considerations preclude the possibility of reducing post-tax real wages at the same time as PAYT taxes are being reduced, the analysis indicates unequivocally that the change in the tax mix will increase inflation, reduce employment and push the balance of trade towards deficit. Furthermore it is the traded industries that are likely to bear the brunt of a reduction in output and employment, even though many traded commodities (e.g., the agricultural commodities) are not subject to the increase in commodity taxes. The changes will be greater the more wage earners are able to appropriate the reductions in direct taxes as increases in post-tax real wages.
Turning now to the operation of the labour market, we begin by recognizing that a cut in PAYE taxes can cause a reduction in the pre-tax wage, an increase in the post-tax wage, or some combination of the two. We consider that this partitioning of the tax cut is the result of a centralized bargaining process over the pre-tax real wage. That is, the labour market is modelled by setting the pre-tax real wage exogenously and assuming that excess labour is available at that wage. Any induced change in the demand for labour then appears as a change in the level of employment. Given the pre-tax real wage, the post-tax real wage is determined by the size of the cut in PAYE taxes.

Finally we assume that any induced change in the real exchange rate appears as a change in the domestic relative to the foreign inflation rate and not as a change in the nominal exchange rate. Since we also assume that the change in the tax mix does not affect foreign rates of inflation, the assumption implies that adjustments in the real exchange rate are reflected by adjustments in the domestic consumer price index.

3. MACRO EFFECTS OF A CHANGE IN THE TAX MIX

The economic effects of the change in the tax mix depend critically on the extent to which the cut in direct taxes is appropriated by wage earners as an increase in post-tax real wages or by producers as a reduction in pre-tax real wages, i.e., on the outcome of the bargaining process over real wages. We consider two possible scenarios.

We have previously established that the important proximate determinant of the changes in the state of the economy under scenario A is the rise in money wages, which inflates domestic prices and reduces the competitiveness of the traded sector. Taken alone, a cut in pre-tax real wages has broadly the opposite effect. Indeed, were the increase in commodity taxes to be accompanied by a sufficiently large reduction in pre-tax real wages, the gainers for scenario A would become the losers and vice versa. The results for scenario B indicate, however, that a 1.09 per cent reduction updates the rankings only moderately. Hence, although reduced in magnitude, the increase in money wages remains the major influence on the assignment of industries to the categories of gainers and losers.

Turning to some of the differences between the rankings, we note the emergence of industry 96 (Air transport) and its supplying industry 71 (Aircraft building) among the gainers for scenario B. Air transport is one of two industries (the other being Water transport) in the service sector that experience significant import competition, and both move up the ranking as their competitiveness improves.

The five manufacturing industries 53, 43, 83, 35 and 74 on the other hand, move down the ranking to become losers under scenario B. All are import-competing industries with a large share of their base period sales going to consumption. For these industries the direct inflationary impact of the increase in commodity taxes has become more important than the induced change in money wages in determining their competitiveness, and hence their ranking. Note that it is only their relative position that declines, the absolute reductions in their outputs actually being less than in scenario A.10
The economic concept of price is a measure of the value of a good or service in terms of another good or service.

In the context of economics, the price of a good or service is determined by the forces of supply and demand. When the demand for a good or service increases, the price tends to rise, and when the demand decreases, the price tends to fall. Conversely, when the supply of a good or service increases, the price tends to fall, and when the supply decreases, the price tends to rise.

The relationship between supply and demand is influenced by various factors, including consumer preferences, income levels, and the availability of substitutes or complements.

The concept of price elasticity of demand refers to the responsiveness of quantity demanded to changes in price. When the demand for a good or service is highly elastic, small changes in price lead to large changes in quantity demanded. Conversely, when the demand is inelastic, small changes in price lead to small changes in quantity demanded.

The concept of price elasticity of supply refers to the responsiveness of quantity supplied to changes in price. When the supply of a good or service is highly elastic, small changes in price lead to large changes in quantity supplied. Conversely, when the supply is inelastic, small changes in price lead to small changes in quantity supplied.

Understanding these concepts is crucial for businesses and policymakers in making informed decisions about pricing strategies and resource allocation.

In summary, the concept of price is a fundamental aspect of economics, and understanding its role in the marketplace is essential for economic analysis and decision-making.
Table 1. Projected Effects\(^{(a)}\) of the Change in the Tax Mix on Selected Macroeconomic Variables

<table>
<thead>
<tr>
<th>Description</th>
<th>Scenario A (Constant pre-tax real wage)</th>
<th>Scenario B (Constant post-tax real wage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-tax real wage</td>
<td>0(^{(b)})</td>
<td>-1.09</td>
</tr>
<tr>
<td>Post-tax real wage</td>
<td>1.73</td>
<td>0(^{(b)})</td>
</tr>
<tr>
<td>Consumer price index</td>
<td>3.06</td>
<td>1.52</td>
</tr>
<tr>
<td>Aggregate employment</td>
<td>-1.13</td>
<td>-0.26</td>
</tr>
<tr>
<td>Commodity tax revenue(^{(c)})</td>
<td>11.81</td>
<td>11.25</td>
</tr>
<tr>
<td>Balance of trade surplus</td>
<td>-0.62</td>
<td>-0.10</td>
</tr>
<tr>
<td>Total tax revenue</td>
<td>0.29</td>
<td>1.12</td>
</tr>
</tbody>
</table>

\(^{(a)}\) Projections in this table are expressed in percentage changes except for the balance of trade surplus which is expressed as a percentage of gross domestic product (GDP).

\(^{(b)}\) Note that these values are set exogenously and are not projections.

\(^{(c)}\) The small difference in the commodity taxes collected under the two scenarios reflects the difference in the composition of consumption expenditure.

The ORANI model is linear in percentage changes of its variables. Hence on the basis of the two benchmark simulations described above, it is possible to derive projections for all other possible dispositions of the direct tax cut between wage earners and employers. For three key variables, those projections are represented by the straight lines in Figure 1. The figure shows that the values of the balance of trade surplus and aggregate employment which existed

All the losers that do not rely on exports \(i.e.,\) industries 39, 31, 50, 68 and 32 are import-competing industries. They are highly competitive with imports because of high import-domestic substitution elasticities and/or high levels of import penetration in their markets. In some cases \(i.e.,\) industries 31, 32 and 50, they are large suppliers of intermediate inputs to other manufacturing industries, and hence the size of their markets, as well as their market share, is contracting.

The decline in the traded sector is sufficiently pronounced to carry over into the nontraded sector, with only four of the "gainers" actually enjoying an increase in output. Under scenario A, industries which rely on intermediate demand tend to contract whatever their trade category. No less than half the gainers are accounted for by service industries. In addition to being relatively insulated from foreign competition, the service industries derive some benefit from a reallocation of aggregate consumption expenditure due to the increase in commodity taxes on manufactured commodities. Aggregate investment expenditure also undergoes a reallocation, in this case due to changes in industry rates of return. Lower high-ranking industries outside the service sector, including all four absolute gainers \(i.e.,\) industries 69, 88, 60 and 61, derive their relative growth from this source.

4.2 Scenario B: Constant Post-Tax Real Wages

In scenario B, the increase in commodity taxes is accompanied by a 1.09 per cent cut in pre-tax real wages, with post-tax real wages remaining constant. When the industries are sorted again according to the projected changes in their outputs \(\text{see Table } 3\), it becomes evident that those which gain \(\text{lose}\) under scenario A also tend to gain \(\text{lose}\) under scenario B.
Figure 1. The percentage change in the consumer price index.
before the change in the tax mix would be restored if the change is accompanied by moderate cuts in post-tax real wages (0.29 and 0.53 per cent, respectively). The inflationary impact of the change, however, would only be offset by a much larger cut of 1.70 per cent.

4. STRUCTURAL EFFECTS OF A CHANGE IN THE TAX MIX

The ORANI model identifies 112 industries and 114 commodities and provides projections for a wide range of variables at the disaggregated level. The range includes commodity prices, factor prices, commodity usage (for current production, capital creation, consumption and exports), factor usage, commodity imports, capital costs and rates of return. However, we shall restrict our attention to the effects of the change in the tax mix on industry outputs, our purpose being to confirm the general analysis of the preceding section from the more detailed results.

4.1 Scenario A: Constant Pre-Tax Real Wages

The projected changes in industry outputs for scenario A, in which pre-tax real wages are held constant, are presented in Table 2. The industries have been sorted into a group of twenty "gainers" whose outputs expand the most or contract the least, and a group of twenty "losers" whose outputs contract the most or expand the least, i.e., the terms gainers and losers are used in a relative and not an absolute sense. Following Dixon et al., we have also assigned each industry to one of the following trade categories. Import-competing industries (IC) are those which sell in markets where the level of import penetration is significant and where imports and domestic output are close substitutes. For export industries (E), exports constitute a significant proportion of total sales and the levels of those exports are endogenously determined in the simulations. The export-related category (ER) includes industries producing commodities that are not exported directly but which are sold largely to export industries. The final classification, nontraded (NT), is applied to all the remaining industries.

Clearly, the industry results in Table 2 support our earlier contention that the most important effect of the change in the tax mix, under the conditions of scenario A, is the deterioration in the international competitiveness of the economy. All the losers for this scenario are traded industries and eighteen of the twenty gainers are nontraded.

Among the losers, fifteen depend heavily on exporting in one way or another. Most export commodities are subject to fairly elastic foreign demand and export industries suffer rapid falls in sales when domestic costs and prices rise. Thus their ability to pass on the increases in money wages to selling prices is strictly limited and they become caught in a cost-price squeeze as a result of the change in the tax mix. The agricultural sector is particularly affected by falling export demand, both directly via industries 3 (High rainfall zone) and 1 (Pastoral zone), and indirectly via the food processing industries 18 (Meat products) and 25 (Food products n.e.c.) which it supplies. The general reduction in activity in the agricultural sector is, in turn, easily responsible for the low output ranking of the agricultural suppliers 76 (Agricultural machinery), 49 (Chemical fertilizers) and 9 (Services to agriculture).