

Submission to Automotive Enquiry

The following paper has been prepared by Craig Milne, Executive Director of the Australian Productivity Council (APC).

Background to the APC

The APC provides assistance to Australian business in the form of productivity improvement consultancy services. The current organisation is the privatised descendant of the not-for-profit company, the Productivity Promotion Council of Australia (PPCA), formed in 1969 and originally funded by the (then) Department of Science and Technology. The PPCA was, in turn, derived from the Productivity Groups, a voluntary association of businesses engaged in beneficial exchanges through training, plant visits and industrial engineering work, that operated from about 1957. The APC has been entirely independent and self funding since 1987 and operates in all Australian states with a team of sixty core professionals, augmented by about thirty associates who may be called upon for occasional projects.

APC services are delivered through productivity audits, training and assessment programs, practical consultancy in the industrial, production and design engineering disciplines and the provision of system management services (ISO/HACCP/QS 9000, ISO 14000, OH&S, etc.) to a large number of Australian companies.

Over a long period, the APC has delivered these services into most parts of the automotive industry, including the assemblers, component suppliers, retailers and repairers, insurers and financiers. Despite this, the APC has no substantial business interest in providing to the automotive sector, as the services described above are offered to a wide clientele. Revenue derived from the whole automotive sector would be less than 5% of total.

Observations on the Australian Motor Industry

It is my view that the automotive component manufacturing and assembling sector is, from a productivity management standpoint, probably the “best” branch of manufacturing industry in Australia. This judgement is based on extensive and intimate observation of general Australian manufacturing practises at the operational level. The automotive manufacturing sector demonstrates skills in project management, product design and engineering, tooling, process engineering, quality and inventory management, scheduling, human resource management and a general organisational professionalism that are of a quantitatively superior standard to those found in other manufacturing activities. The manufacture of motor cars under the current manufacturing paradigm¹ can be described as a semi-continuous processing system with scope

¹ The potential for low cost, efficiently produced automobiles was first demonstrated by Ransom E Olds in 1901, but it was a series of Ford innovations that laid the basis for all subsequent production practise. These included the moving assembly line, close product/process design linkage and dedicated model-specific plant, a high level of vertical integration and the development of precision metal stampings. Body production has been an important aspect of motor car manufacture. From about 1917 all-steel bodies began to replace the timber and metal composite structures inherited from the carriage trade and, during the 1920s, more complex closed bodies, with better weather protection, became predominant. The Chrysler Airflow of 1934 pioneered streamlined body forms and the *traction avant* introduced by Citroen in the same year established the welded pressed steel monocoque body structure as the direction for the foreseeable future. These ideas, inspired by aircraft practise, combined to define the production model that remains the basis of high volume motor car body manufacture. This involves the accurate assemblage

for emergent variation. This is a challenging and difficult operational regime, demanding high levels of skill and commitment from managers, operators, engineers and suppliers.

On the basis of an international comparison, the level of competency demonstrated by Australian design and manufacturing expertise probably lies in the middle range, on a par perhaps with the second level of European firms. Assembly standards are generally better than those achieved in the USA, but not as good as those achieved in Germany or Japan. Local designs are practical and moderately well executed, but not outstanding. Of the two Australian large sedans, one (the Falcon) is almost entirely local in design and execution, and the other (the Commodore) is a heavily re-engineered and re-skinned Opel platform adapted to a slightly modified American drive train. They are both robust, capable cars with very good dynamic performance, poise and handling. Australian chassis development, reflected in the ability of local engineers to achieve performance levels from simple platforms and mechanical systems that are close to those achieved by much more elaborate German designs, is highly regarded.

But detail design and execution, as reflected in whole-of-vehicle conceptual integration, the quality of trim parts and textures, plastic mouldings, glass finishing, rubber parts, fits and margins (particularly in doors and centre sections), and tactile aesthetics in general, do not match current international expectations. It is difficult to fully account for this. It cannot be a lack of experience, as Holden and Ford have been building motor car bodies for a very long time (since 1917 and 1925 respectively)² and it cannot be volume, as production numbers for these models are quite high. Perhaps it is some defect in the Australian technical aesthetic, or perhaps it is constraint imposed by American ownership, because both Toyota and Mitsubishi do much better with their local production. Toyota, particularly, has a reputation among component suppliers for being very demanding. To be fair to the Australian designed cars, however, many Commodore design and build defects have been quietly disappearing since the arrival of a German managing director, and the next Falcon upgrade has reportedly attacked these issues with some real intensity.

The realisation of a higher level of build quality is an important issue for the Australian designed cars, as it has implications for achieving a much needed widening of market appeal for these models. Fleet buyers predominate in the Falcon and Commodore customer base, while private buyers are under-represented. Fleets purchase many units, but margins are poor. Private customers provide better margins, despite higher transaction costs, but are generally much more discriminating³. Private buyers spend their own money much more carefully. Changes in employment patterns in favour of contracting, flexible salary packaging and innovative financial arrangements, quite apart from competition in the fleet market, could undermine the volume

of precisely dimensioned, shape intensive metal pressings. The general production paradigm for high volume motor vehicle production was more or less established by the end of the 1930s.

² Honda is today a benchmark for build quality, but at the time that Honda launched the first T360 in 1963, Holden had already produced a million motor cars.

³ In the mid 1980s the APC delivered a NIES-funded quality program to a large number of Australian companies. An element, involving hundreds of participants, assessed public perceptions of quality by asking syndicate groups to select (and justify their selection) the best "quality" products from a range of similar items. What was surprising was the uniformity of the responses. Respondents invariably defined "quality" in transcending terms, like "excellence" or "superiority", and almost never in terms like "fitness for purpose" or "customer expectation". Selection response criteria could be grouped into three categories; technical attributes, design attributes and workmanship attributes. These types of response, which are almost universal, suggest that consumer preferences for high quality products have an objective basis and are not as manipulable as the marketing ideology would suggest..

positions of the local cars. In the past, high level build quality was confined to the most expensive models, but this is no longer the case. Many economy models, particularly those from the VW group, and nearly all Japanese cars, offer unsurpassed build and workmanship standards.

Another aspect of the fleet problem is that most urban-based private buyers prefer smaller cars. There is no straightforward solution to this. Holden and Ford have both built up capable design and product engineering departments, of which they are justifiably proud. These companies naturally wish to retain them, and it is probably in the national interest that this capability be preserved. But their continuing existence arguably depends on making the case to foreign principals that the Australian market requires cars of unique characteristics, namely large rear wheel drive models⁴, and that the volumes available justify the duplication of the corporate design and development effort that this entails. If private buyers continue to favour smaller cars, and the fleet market contracts, pressure will come on to the local firms to accept Vectra or Mondeo based platforms. If the case for Australian designed cars is weakened, then the ultimate justification for having an Australian operation at all may become an issue.

Advocates of the Australian industry often claim great gifts and abilities for it, such as a flair for improvisation and a unique ability to develop product to suit very short production runs at low cost. I am not so sure about this. Other countries can probably do these things as well as we do. The British industry has a network of small manufacturers, component suppliers and consultants able to produce well executed designs for short run models. Similarly, there are numerous examples of small coach building businesses in Italy and Germany which seem to be able to produce pressed metal bodies, complete cars and well executed conversions in tiny numbers. There are, as yet, few Australian firms able to match this capability, although an opportunity for niche products, vehicle design consultancy, off-road and special vehicles and leisure-biased motorcycles would seem to exist here.

While the low volume/low entry cost techniques, like composite moulding, rapid prototyping, hydroforming, computer aided design, etc., are all available in Australia, they are probably more accessible and more widely applied in Europe than here. In any case, the short run argument is something of a furphy, as the annual production volumes achieved by Ford and Holden in Australia are actually quite high by international standards.

Tariff and Policy Issues

It is difficult to convincingly argue that the current level of tariff protection on passenger motor vehicles imposes excessive costs on Australian consumers. Motor cars are inexpensive here by international standards⁵ and the locally produced large cars are particularly good value. It would

⁴ There is no doubt that for cars over about 1200kg and 110kW, rear wheel drive (rwd) is a better arrangement than front wheel drive (fwd). For smaller cars, packaging efficiencies favour fwd, and the defects of this arrangement are less obtrusive. But the large rwd platforms on which the Commodore and Falcon models are based are not so much derived from a rational calculus of market need as much as they are a leftover from an earlier era. During the 1970s and 1980s, the local industry was not in a position to adopt the newer transaxle based power trains that feature in most current designs.

⁵ It is a challenge in these comparisons to always compare like with like. Manufacturers place products in different market segments in different countries. For example a Honda Accord is an inexpensive mass market car in the USA, but is sold as a premium brand in Australia. In the UK, a Toyota Camry, a low/medium priced model in Australia, costs as much as a C class Mercedes. The Australian built Mitsubishi Verada is pitched against premium

also be fair to say that tariff effects on consumer welfare have been overstated in the past. The convoluted web of distortions and compromises that has constituted Australian policy for the motor industry over the last century certainly provides ample material for economists to ridicule. But it is important to bear in mind that predictions neo-classical theory might properly apply to market behaviour under conditions of perfect competition do not necessarily apply to the pricing strategies followed by hierarchically governed firms. The domestic assemblers have historically operated with plant utilisation issues in mind and together with their status as large, and potentially unpopular, foreign firms, their scope for opportunistic pricing has always been limited by the consequent volume and loss of esteem effects that would follow from such practices.

Perhaps the principal welfare effect of past tariff policy was to divide the Australian market into “common” and “elite” vehicle categories. The locally produced cars were the “common” models and, for the reasons described above, have always been quite inexpensive. The “elite” cars were the imported luxury models and high tariffs priced these beyond the reach of many in the middle classes who believed that their economic position should provide easier access to these things. The injustice of having to pay too much for a Mercedes exercised many a mind at 1970s dinner parties. No doubt some of the economists, professionals and public servants who attended these soirees during the dying days of the protectionist *ancien regime* resolved to do something about it, given the chance. The chance, duly provided, has seen off the tariff. But a Mercedes is now more expensive than ever, a fact no doubt connected to the collapse in value of the Australian dollar, and that collapse no doubt connected to the decline of Australian manufacturing and our consequent need to fill the cavernous abyss remaining from it with imported products. Perhaps this is just as well, as an inexpensive Mercedes would have possessed none of the cachet of an expensive Mercedes.

I suggest that the effect of motor car tariffs on consumer welfare, from the beginning of the Holden era at least, has been more of a restriction on choice rather than on the opportunity to obtain mobility. This proposition is supported by the very high levels of motor car ownership evidenced in Australia over the last fifty years and the fairly steady affordability of domestic cars, measured by the amount of time that had to be worked on average wages to buy one.

The most damaging effect of the tariff was on the early development of the Australian motor industry. Tariffs were applied to motor vehicle imports at Federation with a higher rate set to discriminate against imports from non British Empire⁶ sources. Ford, however, was able to circumvent the higher tariff regime by importing cars (from 1907) via its Canadian subsidiary.

Prohibitive restrictions were placed on body imports after 1917⁷, partly as a way of stimulating the development of a local motor body building industry. This seemed to be a straightforward

Japanese and European brands in the USA, whereas Mitsubishi in Australia matches the Magna range against Toyota Camry, a low/medium price model in the USA. The solution is to treat all of these cars as close substitutes (which they are by any objective measure) and ask instead “What is the comparative price of a substitutable medium sized 2 litre Japanese sedan in Australia, US, Europe, etc.” On the basis of this sort of comparison, Australian consumers do well enough.

⁶ This was significant and accounts for the fact that there were no early attempts by British firms to establish assembly operations in Australia.

⁷ The German adoption of unrestricted submarine warfare against British merchant shipping from February 1917 led to severe capacity shortages. The Dominions were expected to curtail unnecessary imports in order to preserve an increasingly scarce resource.

point of entry into manufacturing that could, perhaps, ultimately lead to full motor car manufacture. This policy achieved the desired result and stimulated the development of a number of large body building enterprises in Australia.

As might have been expected from such a policy, many of the bodies were of very poor quality and considerably overpriced, as the distributors, who usually had interests in body building businesses, exploited the opportunity that import restrictions provided. To protect its interests, General Motors (GM) had moved swiftly to form a relationship with the largest company, Holden Motor Body Builders⁸ (HMBB) whose Woodville plant, the best and biggest in Australia, was subsequently contracted to supply GM exclusively for the first few years of its operation, although HMMB also supplied other importers, including Ford, from its King William Street plant.

Ford became suspicious of the close relationship that was developing between GM and HMBB. Unhappy with the excessive distributor margins that it claimed were being appropriated by its agent, a reseller and service network of uneven quality, and, most importantly, an uncertain body supply, Ford assumed control of its distribution and elected to establish a large body building and vehicle assembly operation at Geelong.

By the late 1920s, the GM position was also in need of clarification. The exclusive supply agreement for Woodville production had expired and production for GM competitors was being undertaken on that site. By this time the production of closed bodies was becoming an overriding issue. These were much more difficult to manufacture than open bodies⁹ and although HMBB had displayed considerable resourcefulness and ingenuity in producing some closed bodies, there was a need for better technology to reduce costs and substantially increase output. The source of this expertise for GM was Fisher Body, a company that it had acquired in 1919 to ensure continuity of body supply and gain access to closed body technology¹⁰. The problem for GM was this; lower-cost closed bodies were now required in the Australian market and GM could supply this technology to HMBB, but, in so doing, GM would enhance the position of its competitors in Australia.

Remember that completely built up body importation (which, incidentally, was what both Ford and GM really wanted), was not feasible in Australia because of the tariff. The two plants potentially able to produce closed bodies were the Ford plant in Geelong (designed with a 40,000 unit capacity in mind) and the HMBB plant at Woodville. Ford, because it had

⁸ Holden is in fact a very old company in Australia. It was founded in Adelaide in 1856 by James A Holden, a leather worker from Walsall in the English Midlands. The company prospered through the saddle and harness business; later, carriage fittings and (at some time after 1914) the production of motor car bodies. The company expanded rapidly following the embargo on body imports imposed (ostensibly) to conserve shipping space in 1917, a shortage brought about by the predations of German U-Boats on British shipping after February of that year. Peak production was in 1927 when Holden (by now one of Australia's largest companies) produced 47,000 car bodies and employed 3,100 production workers in plants at Adelaide and Woodville. Output collapsed with the Australian Depression and the company, then in financial difficulty, was acquired by General Motors (its principal customer) in 1931.

⁹ There is a Holden built closed body of the period on display at the Powerhouse Museum in Sydney, an exhibit which displays the considerable manufacturing complexity required to build such bodies using the timber and metal composite construction techniques of the period.

¹⁰ Body supply had been a problem in the US market as well, and body supply by separate companies was common there as well as in Australia.

ownership of its plant, was able to fully capture the benefits of any technology transfer, but GM, dependent on HMBB, an Australian company which also supplied its competitors, could not.

This difficulty was fortuitously resolved after the collapse of the HMBB business that followed Australia's entry into its 1929 Depression¹¹. The Holden family and its supporters from the Adelaide business establishment did not have the resources to see out the Depression. General Motors needed HMBB, and did have the resources. It subsequently acquired effective control of the Australian company in 1931.

So what had the body tariff achieved? By the beginning of the 1930s, a policy aimed at introducing Australian business to automobile manufacture by stages had, instead, led to the establishment of large plants owned and controlled by the two biggest and best motor companies in the world, against their inclinations and judgement in the first instance, and effectively closed off any real opportunities for Australian firms in anything other than a supporting role. The barriers to entry imposed by scale, knowledge and brand reputation were to prove insurmountable and a promising stream of clever Australian automotive innovations, which might, under different circumstances, have produced a uniquely appealing technical culture and a large, thriving, competitive automotive industry, withered away.

It is an interesting aspect of all this to remember that, up until this time, Australia, despite its small population, had one of the world's largest markets for cars; larger than the German market until the late 1920s, and larger than Japan's until decades after that. In fact it was a market large enough to support at least two efficient manufacturers under the scale conditions deemed necessary by the technology of the time. Our technical and engineering design resources were adequate too; not as good as those available in Germany perhaps, but probably better than those then available in Japan.

The difference between us and them was that both Germany and Japan possessed a determination to develop an independent industry and we did not. Their motives may have been suspect¹² but the beneficial outcomes, with the advantage of sixty five years of hindsight, are beyond dispute.

The Consequences of Policy Failure in Australia

The motor industry case in Australia provides an ample demonstration of the failure of tariffs as an adequate industry policy, although probably not for reasons that most opponents of protection would accept.

A much more important issue than the current level of protective tariffs, and one that needs to be brought to the attention of the public, is that Australia should come to grips with the

¹¹ An indication of the extent of this collapse is revealed by the production statistics. In March, 1927, Woodville monthly production peaked at 5,897 units. By August, 1931, monthly output had plunged to just 26 bodies.

¹² The Japanese Motor Car Act of 1936 restricted the production of American plants in Japan to uneconomic levels, while encouraging Japanese firms to enter the market. Rational economic opinion opposed the Act at the time, arguing that Japan would be better served by concentrating on activities more closely aligned with its comparative advantage, such as rice growing, and leaving car production to the Americans, who knew best how to do it. Japanese militarists, then intent on the subjugation of China, won the argument on the grounds that their nation needed an independent motor manufacturing capability to secure its imperial policy, regardless of quality and productivity deficiencies (which were to prove to be temporary). The German case was not dissimilar.

consequences of its failure to develop a national motor manufacturing industry appropriate to the size of its domestic market, its regional opportunities and its long standing technological and organisational capabilities.

What size should this industry be? Given the extent of the domestic market, from the beginnings of the automotive era until the present time, and the technological capabilities and resources that have been locally available, for all of that time, I believe that the Australian motor vehicle manufacturing industry should be about three times its current size, although probably with no more than one or two principal assemblers.

This claim is based on the comparative current performance of the pioneering automotive manufacturing nations, of which Australia was one¹³. Nearly all of these manage an annual per capita rate of car production that is considerably better than Australia. As a rule of thumb, advanced industrial nations with successful motor manufacturing industries can achieve annual production rates that average their annual sales volume plus 10%. This does not mean that every Frenchman, for example, drives a Renault or PSA product (although most of them do). What happens is that a national industry evolves a design and production paradigm with certain unique features; a set of technical and aesthetic attributes that reflect the cultural values, norms and aspirations of the domestic market. It organises production in a way that most suits local conventions and experience¹⁴. It then applies these to a range of platform sizes to cover most market requirements. Given that the execution is reasonably competent and competitive with other “national” approaches, the loyalty of most of the domestic market can be counted upon. This is why *most* Frenchmen drive French cars. On the margins there will be exchanges, of course. Some Italians will want a Mercedes and some Germans will choose an Alfa, but these will tend to cancel out. The added increment comes from exports to markets that either do not manufacture cars at all, or else manufacture them so badly that their consumers will tend to prefer an import. Russia is an extreme case that illustrates this.

The most cursory look at the Australian industry shows that none of this applies here. The local industry provides four model groups, two of them based on obsolescent Japanese paradigms and two that are based on localised American concepts. More than that, all four platforms are of a

¹³ It is a fact not commonly known that Australia was one of a handful of nations that had engineers, entrepreneurs and manufacturers who were capable of designing and constructing complete motor cars in the early years of the twentieth century. Prior to 1940 there had been about seventy attempts to launch motor car businesses and about thirty for motor cycles. There were a number of outstanding contributors. Harley Tarrant was an engineer who began manufacturing kerosene engines in the mid 1890s in Melbourne. He researched and wrote widely, and with great prescience, on the development of the automobile. He correctly anticipated the resolution of the contending technical paradigms of the period along the lines of the “French automobile”, following Louis Panhard’s work, when many others remained confused. He produced his first complete car in 1902 and his last in 1907. *Tarrant* cars compared favourably with the best European makes of the period; *DeDion*, *Talbot*, *Argyll* and *Mercedes*. Felix Caldwell produced mainly 4WD and 4WS heavy tractors, but produced a technically interesting prototype car in 1913 that embodied the principles described in his patents. F H Gordon manufactured about a thousand examples of the *Australian Six* between 1917 and 1924. From about 1917 until the early 1930s, a group of Sydney-based engineers and promoters were involved in a number of technically interesting car projects, including the *Roo*, the *Marks-Moir* and the *Southern Cross*. A design by A. Moir of the mid 1920s employed a transverse mid mounted engine (to reduce the polar moment of inertia), a novel, limited slip differential, and an innovative stitched and glued plywood laminate monocoque structure of great torsional stiffness. Engineers like Moir and Caldwell, in particular, attempted to define uniquely Australian properties in their designs that were claimed to be well suited to our road conditions.

¹⁴ Car plants are differently organised under different manufacturing cultures. The level of vertical integration, automation, or employee empowerment, will vary from firm to firm.

similar size. It is hardly surprising, then, that as Australian production neither fully addresses any “national” template, nor covers an adequate spread of platform sizes, output could only manage about 320,000 units in the year 2000.

What should it have been? If Australia had matched the production of the UK industry (the worst performing industry in Europe), local output would have been 542,000 units. Had we managed to equal the French output, we would have produced 935,000 units, the German 1,214,000, Canadian 937,000, Swedish 876,000 and the Japanese 1,268,000 units. The mean per capita production equivalent of this group of countries would, if matched by the Australian industry, give us an annual output of 960,000 units. This suggests that the Australian industry is performing well below the “natural” level that should be achieved for an economy of this size.

The beneficial effect that a “natural” level of production of that magnitude would have on employment, the current account deficit, and the value of the currency, would be considerable.

The cause of this underperformance cannot be fairly laid at the feet of the manufacturers. None of the above, either in the description of the present situation or the (partial) account of the historical factors leading up to it, is the responsibility of the foreign owned car firms operating in Australia to address. These companies, on my researches, have always obeyed our laws and contributed widely, helpfully and beneficially to our economic welfare. But the overarching duty of managers is to their shareholders and, by any rational calculus, a global business needs to practice a global division of labour. Australians cannot expect foreign companies operating in Australia to decide against their rational self interest; to produce models here that can be more cheaply produced elsewhere, or to export products from Australia into markets where they may have an established manufacturing or marketing presence.

Rather, it is the job of our public policy to serve our national interest, and it has been the manifest failure of successive Australian governments to develop, implement and sustain a coherent industry policy for the motor industry, that is the source of all of its defects. The industry is complex in many ways and yet the constitution of it, based on sound technical and organisational principles, is not difficult to describe. Rectification of the defects and distortions that have arisen from the experience of failure could lead to highly beneficial outcomes in employment, import replacement and export activity; a reversal of the decline in manufacturing and a considerable enhancement of national technical capability.