Industrialisation and Digitisation in Germany

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Distinguished guests, Damen und Herren, ladies and gentlemen,

A very warm welcome to the Queensland Parliament House, and to the opening of the 5th Brisbane German Week. Though the circumstances are truly different this year, we did not want to compromise the quality of the experience you are used to from previous years. In fact, I believe the now ubiquitous digitisation of our conversations means Brisbane German Week 2020 will be an even more exciting and most definitely a more global event than ever.

In keeping with the spirit of Reconciliation, I like to start by acknowledging the Traditional Owners of the lands where we now stand. I wish to pay respect to their Elders - past, present and emerging - and acknowledge the important role Aboriginal and Torres Strait Islander people continue to play within our community.

In light of the tremendous history of the traditional owners of this land, going back in history by merely 75 years seems like a very small step, but it is hard to imagine how very different our world looked back then.

After WWII, large parts of Germany's infrastructure such as bridges, airports, roads were severely damaged. Half of the liveable space was destroyed, 12 million refugees from the East crowded in, the provision of food and energy was challenging and the German agriculture could only contribute one third of the domestic demand. Demonstrations with signs *'We want coal, we want bread'* took place in German's cities in 1947. Industrial production was just half

of pre-war levels.

In June 1948, the D-Mark was introduced and replaced the Reichsmark and the Rentenmark. This currency reform helped to overcome the black market and re-ignited confidence in German's economy.

This new economic clarity gave birth to a number of organisations such as Adidas founded by Adi Dassler. Some believe, it was only due to Adidas shoes and its innovative spikes, that the 'miracle of Bern', that Germany won the world soccer championship six years later, occurred - a massive confidence booster. Less known might be that Adidas bought its famous three stripes from a Finish sports company for (by todays standards) 1,600 Euros and two bottles of Whisky, and that brother Rudolf Dassler founded Puma, now the third largest sportswear manufacturer globally.

Adidas emerged from its humble beginnings to become with an annual turnover of Euros 23.6 billion, the second biggest sports brand globally (after Nike). Like Adidas the decades following the WWII saw *Made in Germany* becoming a global brand known for its quality, precision and reliability. Interesting side note; *Made in Germany* was actually introduced in Britain by the Merchandise Marks Act to mark foreign products.

Tonight, I like to share with you my personal views on four main reasons behind Germany's success over the last 75 years, years characterised by sophisticated and now digital industrialisation. However, I also like to share four main challenges Germany faces. The way we will manage these will be essential for our future role in the global economy.

Let's start with four reasons for Germany's success in terms of become a leading nation known for its industrialisation. A country in which children spend 25% less time in school than in Italy and where only the Dutch work less hours.

The Marshall Plan and the European Union

The only major powers whose infrastructure had not been significantly harmed in World War II were the United States and Canada.

The Marshall Plan (officially the European Recovery Program) was an American initiative passed in 1948 for foreign aid to Western Europe. The United States transferred over $17 billion (equivalent to over $200 billion as of 2020) in economic recovery programs to Western European economies and it operated for four years beginning 1948. The goals of the US were to rebuild war-torn regions, remove trade barriers, modernize industry, improve European prosperity, and prevent the spread of communism. The Marshall Plan required a reduction of interstate barriers, a dropping of many regulations, and encouraged an increase in productivity, as well as the adoption of modern business procedures.

The initiative was named after United States Secretary of State George Marshall. Marshall spoke of an urgent need to help the European recovery in his address at Harvard University in June 1947. President Harry Truman signed the Marshall Plan in 1948, granting $5 billion in aid to the 16 European nations that joined the Organisation for European Economic Co-operation.

More a proposal than a plan, the Marshall Plan was a challenge to European leaders to cooperate and coordinate. It asked Europeans to create their own plan for rebuilding Europe and recognised the important role Germany would play in the re-building of Europe: *"An orderly, prosperous Europe requires the economic contributions of a stable and productive Germany."*

The OEEC decided which country should get what. The American supplier was paid in dollars, which were credited against the appropriated ERP funds. The European recipient, however, was not given the goods as a gift, but had to pay

for them in local currency, which was then deposited by the government in a counterpart fund. This money, in turn, could be used by the ERP countries for further investment projects.

Most of the participating ERP countries were aware from the start that they would never have to return the counterpart fund money to the U.S. West Germany got 9% of the funds with Britain, France and Italy receiving more funds than Germany. 70% of funds were used to purchase goods from US and in particular supported SMEs, the Mittelstand, and it funded one third of all German imports in 1949.

Germany, however, was left in doubt - would it have to repay its debts? This uncertainty was to have a very positive effect. Germany did not know until 1953 if it had to repay, so money was only given out as loans based on interest, and thus continued to grow.

The Marshall Plan's accounting reflects that aid accounted for about 3% of the combined national income of the recipient countries between 1948 and 1951, which means an increase in GDP growth of less than half a percent. By 1952, as the funding ended, the economy of every participant state had surpassed pre-war levels; output in 1951 was at least 35% higher than in 1938.

Unlike other countries, post-war Germany had spare industrial capacity as military production was not allowed. Thus, Germany could orient itself towards global markets and civilian products instead of the Korea War.

In 1960 already, Germany had become the second biggest export nation behind US despite a massive lost towards East Europe where related trade fell from 1937: 17% to 4% in 1960.

In 1972, Willy Brand flew to Harvard with a script for a speech and a check for $10m, annually renewed, to invest in the US-German relationship, our way to say thank you.

Overall, it is believed that the impact of the Marshall Plan was more psychological than economic as Germany rebuild confidence and there was a limited sign of economic revenge.

Besides the financial aid, the Marshall Plan was instrumental in catalysing the emerging “United Nations of Europe” and made import/export easier. This was a very important market expansion for a country such as Germany which relied on international trade. The introduction of the Euro in 1999 was a further plus for Germany as it now benefits from a weaker currency, the D-Mark on its own would have been much stronger.

These early years, ignited by the Marshall Plan and with the emergence of a regulated European market under Chancellor Adenauer and Economics Minister Ludwig Erhard were essential for Germany’s development to become one of the leading industrialised countries in the world, what we call in German the *Wirtschaftswunder*.

Social Economics

Scaling and moving from mass industrialisation to higher product varieties characterised the 60s. Between 1950-63, we witnessed a 183% increase in production with an average growth of 7.6%, max 11.5% in 1955. In 1955, we also saw the 1 mio. VW Beattle produced and private consumption moved from survival mode to enjoying new levels of affordability, i.e. travel, furniture, entertainment and appliances. The Sonntagsbraten became a family routine.

This economic success was supported by the proactive recruitment of additional labour from European countries and by 1964 one million Gastarbeiter had arrived in Germany.

Despite rising wealth, Germans tend to live a frugal live and dislike credit cards. Interest rates have been stable over the decades meaning massive borrowing and debt did not occur.

Since the end of the second world war, the balance between capital and labour was essential to the architects of Germanys post world. Labelled Soziale Marktwirtschaft and materialised among others in the Mitbestimmungsgesetz, the interplay between the two economic paradigms has been named as one of the key reasons of Germany's success. The focus in the debate between capital and labour was on consensus seeking as opposed to confrontation (UK, France). A strong representation of the union in the decision-making of the boards is a characteristic of German companies.

Germany's focus on a strong position of labour is also visible in its education policy. Keeping education as a public good ensures a highly qualified workforce. The globally unique apprenticeship model in which practical experiences are combined with further tertiary education in a unique model. In comparison, there is less of a stigma attached to vocational training and technical colleges than in other countries. It is this part of the education that separates Germany, a country in which children leave school so they are home for lunch.

The strong employment protection regulation in Germany also means that German workers were willing to work less to keep their job. As a result of the strong bond between workers and employers, German unemployment rate never dramatically increased. This explains the comparatively low working hours. It also explains why COVID-19 caused a 10% decline in Germany's GDP in the second quarter 2020, but its unemployment rate only raised from 3.8% to 4.2%. The explanation is *Kurzarbeit*, short-time working arrangements with reduced wages which are subsidized by the government.

In sum, Germany's industrialized model catered for global demands, had capacity reserves and could rely on qualified labour. More and more, agriculture was replaced with industry, in particular in chemical, automotive, electrical and mechanical engineering.

In hindsight, one might argue that industrialisation success prevented investments in future industries and products. innovation was regarded as more important than process innovation with a clear concentration on energy-, resource- and capital-intensive industries.

An exception is SAP, the globally leading company in terms of enterprise systems worldwide. Founded in 1972 in Walldorf by five former IBM employees, SAP now has offices in 180 countries, more than 100,000 employees and is in terms of sales the third largest software company worldwide (after Microsoft and Oracle). Its software is the backbone of most medium to large companies, and it is a leading player in contemporary digital technologies such as AI, blockchain and IoT.

Decisiveness

In June 2011, Chancellor Merkel, who holds a PhD in quantum chemistry, declared that Germany will evacuate nuclear energy as a source of its energy by 2022. This drastic move was motivated by the Fukushima tragedy and meant that 25% of Germany's energy supply, and its 17 nuclear reactors, would be switched off. In an even more decisive move, the German government decided in January 2019 the exit from coal, noting that hard coal makes up 16% and brown coal 24% of the German energy supply.

This energy transition, called Energiewende, is seen as Germany's second biggest challenge since the Wende in 1989. The focus is shifting from energy

demand to energy supply and towards a more decentralised model of energy production.

This enforced constraint has catalysed substantial innovation in Germany in the area of renewable energy, an area where German technology in terms of wind and solar is globally leading, though the race for global market leadership remains challenging. An explicit priority area here is green hydrogen, i.e. renewable energy empowered electrolysis. Our national hydrogen strategy is seen as a key solution for the decarbonisation of our industrial sectors and the ambition to become the world leader in terms of hydrogen technology.

Smart Industrialization

Maintaining a strong 'Made in Germany' brand requires ongoing attention and renewal. The shining example in the context of today is the notion of Industrie 4.0. Introduced publicly at the Hannover Fair 2011, it represents a national strategic initiative of the German government, and the mantra of the intelligent automation of the factory. By now, it has become symbolic for the contemporary digital strategies of German manufacturers and service providers such as Siemens, Bosch or SAP. In fact, Industrie 4.0 is often seen as the next big German export success. This fourth industrial revolution follows mechanisation, mass production and automation, and combines smart sensors, robotics, autonomous things, nano technology, advanced data analytics etc in order to facilitate an increased personalised, cost effective production.

The idea of consolidating efforts under such a brand name has now been taken up, and in fact inspired similar thoughts in Australia with its initiatives in areas such as Mining 4.0.

Industrie 4.0 is the ideal umbrella initiative combining large scale upskilling initiatives (see Siemens and its Swinburne partnership), new technology

development and entire new levels of competitive, industrial efficiency. It is at the heart of Germany's commitment to engineering excellence and strives in the environment of qualified labour, tech-friendly regulation, high attention to export and desire for perfection.

It will be important, however, to ensure that such digital initiatives do not stop at the gates of factories and increasingly encompass smart consumption as well. An emerging trend that I call Industrie 5.0, and this brings me in the second part of my speech; to the four challenges I see for Germany's future digital industrialisation.

Challenges Ahead

In order to compete and strive in the contemporary, global digital economy, Germany has to address four challenges to ensure it modernizes its industrialization competence and remains competitive.

From Product Design to Experience Design

Hybrid products are combining an industrialized product with a complementary service. Tesla's make-to-evolve is such an example where the physical car continuously improves with every system update. The selling of a car forms the beginning of a relationship at Tesla. This model is in sharp contrast to the traditional car manufacturer which is still largely driven by a make-to-order/ stock model in which the end point is the selling of the car. Such models of continuous connectivity expand the factory-focused notion of Industry 4.0 which dominates the focus of German manufacturers.

However, we see a number of initiatives of German brands such as Daimler or BMW with their mobility-as-a-service in which the physical product is enhanced with services. This also includes, for example, BMW's Park Now which facilitates

finding and paying for a car park, another example is Volkswagen We. However, the challenge will be to not simply to digitise the physical product, but to use digital means and new business models to create entire new forms of customer value. An example is the idea to not just simply put the Internet into the car, but the car (and with it all the data and insights it generates) into the Internet.

Open, Independent Platforms

Global stock markets value the future of platform companies higher than the future of traditional industrial companies. Such valuations create capital which can be further invested in innovation. The current global list of the highest valued companies, however, does not list a German-based company in the top 40. In August 2020, SAPs ranked 41, Siemens 93, Volkswagen 130, Bayer Leverkusen 187 and BASF 241.

A main reason is that platform-natives are rather the exemption in Germany as industrialization is tailored to a product rather than the exponential growth of a digital community.

An example for a successful German platform is Zalando. Founded in 2008 it provides fashion and more within a digital shopping mall. Inspired by US and China models, Zalando offers 300,000 products across 2,000 brands and builds on the long-tail-economics model behind Amazon, Alibaba and the likes. With now 15,000 employees it has been loss making for the first 6 years up to 2014 and traded short-term revenue off for long-term growth. This feature is common to other platform models incl. the fact that 50% of sales is returned; the willingness to experiment and that 60% of orders come via smartphone. Zalando's online market share in Germany (the 5th biggest ecommerce market globally) is approx. 15% of Amazon's market share, a very different picture to Australia where Woolworths is leading in terms of online retail market share.

It is a good sign that Germany is increasingly becoming a recognised birthplace for new platform-native unicorns including Deposit Solutions, N26, Celonis or Hello Fresh. In fact, Berlin is emerging as the European start-up capital. This is another indication that Germany is not just the Land of Dichter and Denker, Poets and Thought Leaders Leaders, but also of Inventors and Engineers.

e-Government

In the provision of digital administrative services, Germany ranked 20th out of 28 EU member states and 9th in a recent Government as a platform ranking by Accenture (out of ten industrialised countries, Australia is ranked 8th). In comparison with its European neighbours, less Germans use the Internet to interact with the government. While on average every 3rd European uses the Internet to submit forms to their government, it is only every 7th German. Internet speed Germany is ranked 18th behind Poland and Austria. 20% of German advertisement budgets goes towards Internet, in South Korea or UK it is 33%. This is a fast-moving space, as some nations now deploy AI e.g. for crime investigation or traffic management.

These figures are in sharp contrast to Germany's leading role in using technology in the context of its industrialised production – Industry 4.0. The notion of Government 4.0 seems a distant vision.

There are a number of reasons for this such as the difficulty to attract tech talent to government service design or limited public-private tech partnerships. There is a high demand for the German government to become more of an inspiration and a facilitator of a digital economy to keep up with the way countries such as Estonia or Singapore facilitate digital public transactions. The appetite to export digital government services, like the Digital ID from Estonia, is so far limited in Germany. EU regulations such as GDPR have created further uncertainties and

administrative challenges, in particular for organisations who aim to become global, data-intensive platform providers.

The under-developed digital maturity in government services could be a significant threat for Germany's attractiveness as we start to see how digital capabilities quickly become high priority selection criteria for investors and talent, and could even overcompensate the lack of qualified labour, in particular in a world with a virtual workforce.

Cash is King

The average German carries 100 Euro in their wallet and only since 2018 more plastic than cash is used for payments. Germany still has one of the highest cash rates in Europe and the Bundesbank has issued more Euros than the bloc's other members combined since 2002. Key reasons are privacy concerns, the ability to track spending and hoarding cash at home. *Nur Bares ist Wahres* is a common Germany saying. In a recent survey, 90% of Germans reject the elimination of cash payments, an aim that countries like Sweden, which aims to be cashless by March 2023 have. To compare: 48% of all payments in Germany are made in cash, in Australia: 27%. The support of cash will without any doubt prevent digital experiences and innovation related to smart, AI-empowered money.

However, the younger generation has a clear demand for cashless payments and successful unicorns such as N26 are now offering globally leading e-banking solutions that will benefit from the open banking paradigm.

Conclusion

We believe in a future where new products can be created in real-time, said Jan Wilmking from Zalando. This quote demonstrates how industrialized production and personalised digitization will come closer and closer together. Germany enters the opportunity-rich digital future with a strong industrial legacy and has to explore digitization and its impact on the future of digital industrialisation.

We started tonight with the confidence that Adolf Dassler showed when he created Adidas in 1949. Move 70 years forward, and Adidas showcases digital industrialisation in the domain of sport shoes. With their speed factory, launched in 2017 in Atlanta and Ansbach, it replaced mini distribution centres with mini factories. Advanced Manufacturing, i.e. robotic 3D printing is used to create cost-effective personalised shoes, the Futurecraft 4D. Though the technology is still not mature and Adidas is downsizing its original plans, it is a compelling example for contemporary digital industrialization in Germany – 70 years of confident innovation in light of ever-changing circumstances.

Let's hope that Germany will be as quick in taking the next steps with its digital industrialisation as some of the world's greatest athletes are in their Adidas shoes.