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Kicking away the financial ladder? German development banking under economic globalisation

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Author order is in order of contribution.

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ABSTRACT: While extensive literature exists on how economic globalisation has limited developing countries' policy space for industrial policy, the literature on how it has affected advanced economies remains scant. We utilise original archival material to analyse the activities of the German public development bank, the Kreditantstalt fur Wiederaufbau (KfW), in order to shed light on an important, but neglected aspect of German industrial policy. We analyse how the KfW responded to multiple challenges after the rise of economic globalisation, including a funding crisis, international agreements to limit export subsidies and Europeanisation. We argue that KfW successfully managed to navigate these challenges in order to retain, and even increase, its ability to conduct selective industrial policy in the post- 1980s era. This was possible because of Germany's hard currency and low sovereign credit risk, large market size, which was augmented by membership in the European Union, and Germany's position as regional hegemon within Europe. More broadly, this shows how, conditional on domestic politics, advanced economies are able to shape and exploit the rules of the international economic system to increase state intervention in the allocation of credit, for industrial policy purposes, even as developing countries are given the opposite policy recommendations.

KEYWORDS

Development Banks, Industrial Policy, Globalisation, Policy Space, Finance, Germany.

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INTRODUCTION: POLICY AUTONOMY FOR INDUSTRIAL POLICY

In the aftermath of the 2008 financial crisis and recession, 'market fundamentalism' is increasingly being rejected even by those that were once its core advocates (Hopewell 2017), and industrial policy[4] has enjoyed something of a renaissance (Warwick 2013; Wade 2012), even in advanced economies due to fears over de-industrialisation and their declining share in global manufacturing (Hopewell 2017). The debate is no longer about whether industrial policy is necessary, but about whether it should conform to, or defy, comparative advantage (Chang and Lin 2009; Lin 2010, 2011; Wade 2011) with even neoclassical economists making the case for industrial policy (Hausmann and Rodrik 2006; Lin 2012). This renewed interest has led scholars and policy makers alike to question how much remaining 'policy space' countries still have for conducting industrial policies, in the wake of financial and trade liberalisation since the 1980s, and the proliferation of multilateral and regional trade and investment agreements since the 1990s (Aggarwal and Evenett 2014; UNCTAD 2014), reigniting interest in the longstanding debate over the effects of globalisation on the domestic policy autonomy of the nation-state.

This paper advances this debate in the area of advanced economies' policy space for selective industrial policy, by examining the case of how one of the world's largest industrialised economies, Germany, continues to use state-owned banks to allocate credit to priority sectors in order to conduct industrial policy despite the challenges of economic globalisation. This is done through a focus on the activities of its largest national development bank, the *Kreditantstalt für Wiederaufbau* (KfW)[5], from the post-war era to the present. Against the backdrop of IMF sponsored bank privatisation that has swept the developing world since the 1980s (Andrews 2005), and the sharp decline of state-owned banking across OECD economies under liberalisation pressures (Verdier 2000), Germany still retains the *most nationally important state-owned development bank in the world* when measured by total assets as a percentage of GDP. With total assets of nearly 500bn Euro, the KfW is even more important to its national economy than the BNDES or China Development Bank are to Brazil and China respectively (Humphrey 2015, 3), and is unique in terms of

[4] Industrial policy is defined as 'any policy that attempts to affect the evolution of *specific* industries through state intervention in order to effect national efficiency and growth' (Chang 1994).
[5] The bank underwent a name change to 'KfW' in 2012. Throughout the paper we will use the abbreviation 'KfW'.

size compared to other advanced economy investment banks (EAPB 2016, 9-11). We argue that because of its powerful position in the global political economy, augmented by membership in the European Union, and its position as regional hegemon in Europe, Germany was able to navigate the challenges posed by globalisation after the 1970s, including a funding crisis, international agreements to limit export subsidies, and Europeanisation, and *increase* state intervention in the allocation of credit through KfW. This shows that despite the constraints of globalisation, advanced economies still retain significant 'room to move' in pursuing a proactive industrial policy through the financial sector, contingent on their domestic politics being supportive of such policies.

Globalisation and policy space in advanced and developing economies

Scholars have argued for decades that globalisation has led to a process of 'neoliberal convergence', where market forces and threats of exit by capital have dramatically restricted state intervention (Strange 1996; Drezner 2001; Garrett 1998), and a move towards a market-based financial system approximating the Anglo-Saxon ideal type, as globalisation erodes national heterogeneity (Dore 2008; Engelen 2008; Maxfield et al 2017). In the area of industrial policy, a wealth of literature argues that developing countries' policy space for industrial policy has shrunk due to trade and investment agreements, (Gallagher 2005;Shadlen 2005; Wade 2003), including in the financial realm, where the IMF and World Bank have advocated for the dismantling of industrial policy tools such as public development banks, interest rate controls, and directed credit programs which were historically used to direct credit towards strategic sectors (Cull 1997).

This 'convergence' hypothesis has come under much criticism, with scholars instead emphasising continued diversity in national economic systems despite globalisation (Boyer and Drache 1996; Maxfield 2017; Weiss 1998; Wade 1996; Zysman 1996), and arguing that the strength of and response to external pressures is determined domestically (Helleiner 1995; Weiss 1998). Furthermore, globalisation can have important 'state augmenting' effects, because not only can external liberalisation bring increased demands for the state to compensate for externally induced economic volatility (Garrett 1998; Mosley 2005; Weiss 2005b). It can also increase demands for states to intervene to accomplish industrial policy objectives, (Breznitz and Zysman 2013). In the realm of industrial policy, scholars have argued that external constraints on national industrial policy have been greatly exaggerated, citing the apparent ease with which governments increased economic interventionism in response to the 2008 crisis (Aggarwal and Evenett 2014; Lewis 2014; Oh 2014). Others argue that while increased interdependence has increasingly proscribed traditional industrial policy tools such as tariffs, governments have overcome these constraints by becoming more creative in order to assure traditional economic policy objectives with new means (Clift and Woll 2012; Weiss 2005b).

A related branch of scholarship has argued that there is a difference between the extent to which globally powerful industrialised and weaker developing countries are able to adapt to these external pressures (Mosley 2003; Rudra 2002), and pursue a proactive approach to sectoral promotion under globalisation (Weiss 2005b). Development scholars argue that more powerful advanced economies are able to shape the rules of the global economy in their favour, and 'make room to move' (Weiss 2005a) under the same international agreements that limit developing countries' policy space. This is done by shaping the international order in a way that best suits their current development trajectory (Weiss 2005a), and preventing developing countries from undertaking the same policies that they used in their own industrialisation phases, in a process known as 'kicking away the ladder' Chang (2002). Yet with some notable exceptions (Block 2008; Hopewell 2017; Mazzucato 2013; Wade 2017) there remains an important gap in the literature on how developed countries actually pursue their industrial policy objectives under globalisation.

To contribute towards filling this gap, we analyse how one of the worlds' largest and most successful industrial economies, Germany, has continued to conduct industrial policy through its public development banks despite the challenges of globalisation. Public development banks have historically been a key tool of industrial policy in both developing and advanced economies, including Korea, Japan, China, India, Brazil, the US, and France to name a few. Development banks acted as the state's agent for allocating long-term (often subsidised) credit to targeted industries considered vital for growth, but which the private sector was too risk-averse to finance (Amsden 2001; Kindleberger 2015; Mazzucato and Penna 2016; Mertens and Thiemann 2017; Verdier 2000). These banks do not necessarily need to have a large financing volume to be effective in influencing the sectorial allocation of resources[6]; their finance is often concentrated in very large, economically important projects that have spill-over effects for the rest of the economy (Hopewell 2017), and they often play a catalytic role in attracting private sector finance to otherwise unattractive projects (Griffith-Jones 2016).

We argue that with the support of the Ministries of Finance and Economics, KfW has been able to been able to increase its size, and maintain a wide range of its post-war sectoral targeting activities, despite growing external constraints and domestic challenges that emerged after the 1970s, including 1.Funding pressures that intensified after the 1980s, as pressures to reign in government spending became more salient 2. New international trade regulations limiting subsidised export finance, one of KfW's key industrial policy tools 3. Europeanisation, specifically, the EU State Subsidies law, which aimed to limit member states industrial policy.

Our findings on KfW's post-1980s role in selective industrial policy challenge the assumption made in the 'convergence' literature that financial globalisation and the proliferation of trade and investment agreements has made many forms of industrial policy non-viable. Even as the German financial system converged in some respects to a more market-based system, state intervention increased at the same time, not only to 'compensate' productive sector firms for a decline in private bank finance after liberalisation, but also to continue promoting strategic sectors as part of industrial policy in order to make domestic firms more internationally competitive. Furthermore, rather than impeding KfW's directed lending, globalisation actually enabled it in important ways; without the process of financial globalisation that began in the 1980s, the deep and liquid international capital markets on which KfW began funding itself, once domestic budgetary funds were no longer forthcoming, would not exist.

However, our research also points to the fact that globalisation may not have equally state augmenting effects for all countries. The German case illustrates the advantages that advanced economies have over developing countries in navigating the constraints of globalisation to further their own industrial competitiveness. Germany's hard currency and low credit risk for its public securities was vital in enabling KfW to

[6] For example as of December 2015 KfW's lending volume makes up 14% of total loans to the non-financial corporate sector by banks in Germany (KfW 2015; Bundesbank timeseries database). However figure dramatically understates its importance, since KfW finance is targeted only towards specific sectors, and is meant to be catalyzing in nature.

raise the international capital market funds that enabled its expansion. Similarly, its powerful position in the global political economy, augmented by Germany's membership in the EU, and its position as regional hegemon in Europe, allowed it to shape international trade and European integration agreements, and exploit loopholes in them, to KfW's advantage. However, just because advanced economies have more 'room to move', does not mean they take advantage of it. This is conditional on the domestic politics. While KfW enjoyed strong Ministerial and cross-party support, other advanced economies, such as the US, were held back from conducting similar policies for domestic political reasons.

Our analysis of KfW's industrial policy activities relies heavily on archival annual reports (1949-2015) we obtained from the KfW office in Berlin. Using these reports, we collected and analysed data on KfW's financial information, funding sources, and lending activities by sector. The annual reports were also used qualitatively to understand historical shifts in KfW's business model, industrial policy priorities, and relationship with the Federal Ministries. In order to supplement the archival data, we conducted five interviews with key officials from the KfW, the Association of Public Banks (*Verband öffentlicher Banken* -VOEB), Association for Savings and Regional banks (*Deutscher Sparkassen und Giroverband* - DSGV), SME association (Deutscher Mittelstandsverband), the public development bank of Berlin (*Investitionsbank Berlin)*.

The rest of the paper proceeds as follows. The empirical section begins by introducing KfW's governance structure to establish that KfW's activities are a reflection of broader government policy. We then outline KfW's industrial policy priorities during the post-war era. Next, we discuss some of the major challenges KfW faced after the 1970s, and show how it was able to navigate these challenges in a way that allowed it to maintain its core industrial policy priorities, while still abiding by the official rules of the international financial and trading systems. Finally, we compare KfW's post-80s industrial policy with the post-war model in order to argue that while there have been some important changes, many of KfW's core industrial policy functions remain..

CONTEXT: KFW, THE DEVELOPMENT BANK FOR GERMANY

KfW was originally set up in 1948, in order to channel Marshall Plan funds for reconstruction into the real economy, under the 'Law for KfW' (*Gesetz über die*

Kreditanstalt fur Wiederaufbau), with a mandate to 'performing promotional tasks, in particular, financings, pursuant to a state mandate' (KfW Law, Art 2(1)). The close relationship between the Federal Ministries and KfW is manifested in a Federal Government public guarantee, enshrined in law (KfW Law, Art 1a) as well as in KfW's governance structure. Historical analysis of KfW's board membership shows that the Finance Minister usually serves as a chairman of the Board of directors, and the Economics Minister as the Deputy, with representatives of various other federal ministries, industry, trade, and banking associations, trade unions and members of the *Bundesrat*, the legislative body representing Germany's federal states filling other seats (KfW annual reports, various years).

Our interviews confirm the close collaboration between KfW and the government lasts to this day. According to a KfW employee 'Meetings are held frequently and there is great trust between the entities… Usually the ministries BMWi [Economic Affairs and Energy] and BMF [Finance] come up with the initiative to finance programmes. With an idea at hand the ministries ask the KfW for a feasibility plan. The bank proposes how much credit and how to implement the programme… Sometimes the bank tries to influence or promote ideas by directly talking to MPs, who then contact their friends in the respective working groups' (Interview, KfW employee). According to a representative of the VOEB, the organisation that lobbies on behalf of German public banks 'KfW doesn't really need help with lobbying domestically, it basically *is* the Ministry of Economics and Ministry of Finance' (Interview, VOEB). In 2015 a list of lobby representatives with unlimited access to the German parliament revealed that KfW had the highest number of lobbyists who were free to enter the parliament any time and without prior appointment (FAZ 2015).

KFW IN THE POST WAR ERA

From its inception KfW played and important role in sectoral targeting in the German economy. According to KfW's Vice President Hermann J. Abs, 'The KfW's activities [during the post-war era] were not exactly oriented to an ideal picture of a free market economy. To be precise, it was engaged in directing investments' (Abs, cited in Harries 1998, 37-8). From early on, KfW's annual reports state the main economic problem was not capital shortage but that 'available capital has been misdirected in the economic sense which has so far been preventing the supply of sufficient investment capital to those branches of industry that are of decisive importance for building up the foundations on which production must be based' (KfW 1950, 21-22).

A clear priority for KfW was the promotion of high technology, high value added manufacturing because 'specializing in processes of an advanced technological level not only ensures a competitive position on the world market but also simultaneously makes an essential contribution to the shift in the structure needed within our economy' (KfW 1975, 72). KfW considered the capital goods sector especially important due to its ' technological lead on other sectors', for its role in job creation, as well as because innovation in the sector was considered to 'have a bearing upon other sectors and often create the prerequisite for further increases in their productivity' (KfW 1975, 72).

KfW's international financing operations, especially its provision of long-term export finance in its capacity as an official (state supported) export credit agency (ECA), was considered necessary to 'maintain the competitiveness of German enterprises in specific export markets' (KfW 1974, 69) especially to further promotion of capital goods in order to achieve economies of scale: '[T]he objective of general export financing is to facilitate the development of plants requiring application of complex technological know-how, the German domestic market would often be too small for the development and economical manufacture of such plants' (KfW 1974, 72). The creation of a current account surplus was seen as vital to maintaining a strong currency, and was a priority for KfW during period when Germany experienced a deficit. In the 1950s, KfW reports state 'the task is now to reduce the adverse trade balance which has arisen' (KfW 1950, 19) and recommends restricting domestic consumption in order to 'increase exports further, and to that extent to achieve equilibrium fairly soon' (KfW 1950, 19). Between 1979 and 1982 when Germany again dealt with a deficit (1982, 19), KfW reports outlined its role in generating current account surplus: 'Long-term finance for export transactions helps to strengthen the competitiveness of German exporters, which in turn lends support to the endeavours at safeguarding and boosting sales in foreign markets. In this way, a substantial contribution is made to reducing the German current account deficit and securing jobs at home' (KfW 1981, 17).

Although not necessarily large in comparison to total German export value[7], KfW's export finance played an important role in facilitating large projects in capital goods sectors like industrial plants, aircraft, and ships, and risky new markets where the large private sector banks were unwilling to lend either because the required loan volume was too large, or the project was too risky (Harries 1998). KfW's export finance was provided both to the German company, as well as to the foreign buyer of German goods, and was highly subsidised, in order to help German exporters win international contracts away from competitors and capture newly independent developing country export markets. It was also highly selective; the 'general export financing' program aimed to promote exports of industrial plant and machinery by a relatively small group of well-known firms such as Siemens, Krupp, Ferrostaal, Ihde, Fritz Werner and AEG to the major newly independent developing economies' (Harries 1998, 93), while specific export finance programs targeting shipping and aircrafts exports were set up separately (KfW annual reports).

Export financing was complemented by FDI finance to encourage outward investment by German companies, loans for raw materials procurement, and tied and untied development aid, all at below market rates. The purpose was to open developing economies to German exports and FDI (KfW annual reports, various years). Over 60 % of development aid provided by KfW usually went directly back to German firms, with the majority of projects being executed by German engineering firms (KfW 1980, 98).

KfW's domestic activities during this time were 'orientated towards promoting structural objectives within economic branches and development areas' (KfW 1968, 84), and included long-term subsidised domestic lending, carried out through on-lending programs with other private and public banks, and supported high value added manufacturing both directly and indirectly. After the initial postwar reconstruction period, KfW 'increasingly concentrated its activity on long-term industrial lending. The initial inducement was the necessity -in view of the absence of any capital market and the enterprises' difficulties in financing out of their own capital resources' (KfW 1968, 87). In addition to direct aid to the manufacturing sector, especially mechanical and electrical engineering, vehicle and ship building, a

[7] The total value of exports that KW helped to finance in 1974 was about 10 % of the export volume of durable capital goods to developing countries, the share of the latter in total German exports in turn amounts to roughly 5 % (KfW 1974, 72).

substantial amount was spent on supporting sectors such as manufacturing research and development, basic goods industries such as steel and basic chemicals, housing construction, transport and communication (KfW annual reports, various years), with priority accorded to 'sunrise' 'projects in the structurally little developed areas subject to promotion by the public authorities' (KfW 1968, 84).

KfW also provided special subsidies to improve the productivity of declining industries such as steel, coal, shipbuilding, and textiles, in order to 'increase the efficieny [sic] of existing productive capacities-by switching from one form of production to another, by amalgamating productive plants, or by introducing modern technical methods' (KfW 1968, 84), and to 'promote the procurement of plant and equipment needed to start new manufacturing operations with more favourable future prospects.' (KfW 1970, 120). From 1971 onwards, programmes targeted towards financing investment for SMEs (the *Mittelstands* or 'M' Programmes) became increasingly important because KfW considered that SMEs 'are faced with greater difficulties in financing than their competitors [large firms]. With a view to offsetting this disadvantage and '*to inducing them to effect certain investments*, the Federal Government has developed various programmes in favour of such enterprises' (KfW 1970, 121, emphasis added). This matched the increasing need for highly specialised SME firms servicing industrial needs in research, development, communications etc. (KfW 1971).

A good example of how KfW conducted selective industrial policy during the post-war era is its promotion of large civil aircraft. This sector fell under the special category of sectors that were important 'to Germany from the viewpoint of energy supply or technology' (KfW 1975, 32). Promotion of aircraft exports was considered important because 'the domestic market [was] offering little sales possibilities', and 'only by the aid of export can larger series of production be achieved, which are necessary to make production economical and ensure high technological standards' (KfW 1975, 32). The government's aim was to help Airbus, Europe's largest aircraft manufacturer, formed in 1970, gain share in the world market, at a time when it was dominated by American manufacturers Boeing, Douglass, and Lockheed (Harries 1998, 135-137).

Due to the large financing volumes and high risk inherent to the sector, private banks were unable to play a leading role in financing Airbus's exports at this time (Harries 1998, 135). KfW was therefore commissioned to finance the initially lossmaking Airbus by the Ministry of Economics as part of a coordinated interstate effort between Germany and its European partners (KfW 1975, 62). KfW received special funds from the Ministry of Economics, which it used to provide subsidised export loans and grants for the export of aircraft, backed by government guarantees (KfW 1975, 62). This enabled Airbus to sell aircraft to the most risky American buyers[8] which would never have received private sector loans, in order to penetrate the US home market, and expand production. This international strategy was complemented by domestic loans and grants for aircraft construction and aviation research and development (KfW 1967, 1975). With the help of this large state-financial capacity, from having only a five percent market share in 1970, Airbus was able to make significant inroad by the early 1980s, and sell its product to top rated airlines in the US, European, and East Asian markets, even though it continued to remain far behind Boeing (Harries 1998; Mujamdar 1987).

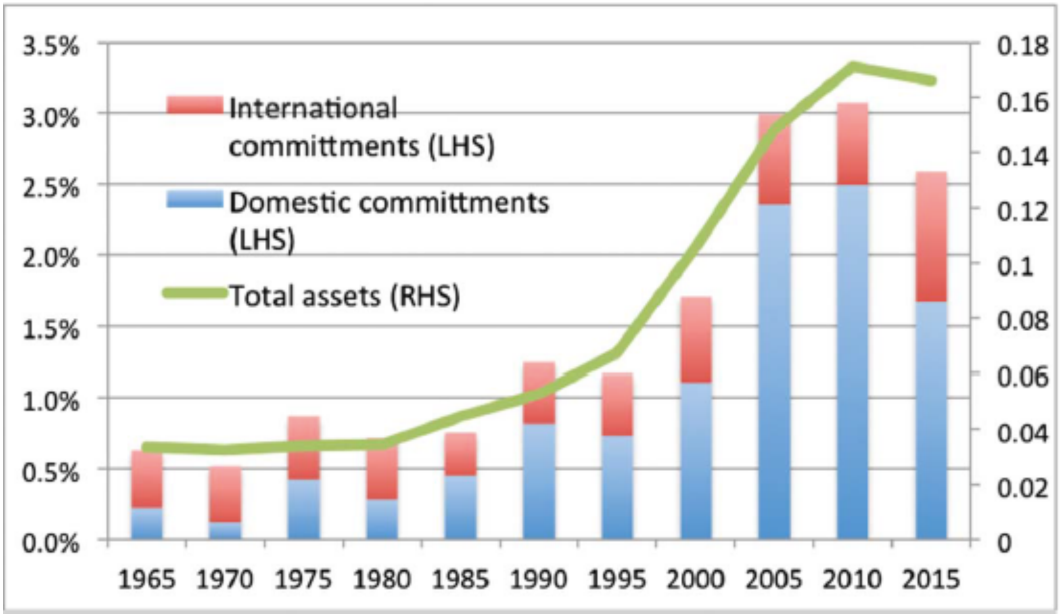
CHALLENGES TO KFW IN THE ERA OF GLOBALISATION: ROLLING BACK OR SCALING UP?

Faced with multiple shocks after the 1970s, including the oil crisis, and over two decades of post-war growth giving way to economic crisis and stagflation, the post-war German model saw profound changes. Rhetoric with regards to the role of the state and financial liberalisation changed over the course of the 1980s across the political spectrum, while changes in policy gained steam by the 1990s (Kitterer 1998, 231-3; Sablowski 2009). From the 1980s onwards, among the voices calling for fiscal prudence were increasingly prominent politicians in the liberal Free Democratic Party (Abelshauser 2001, 135), while parliamentary working groups started demanding better monitoring of tools for industrial policy, including a more strict assessment of state subsidies (Bundesdrucksache 1984). Similar to other advanced economies, Germany underwent a process of domestic financial liberalisation after the 1980s, with its financial sector moving increasingly towards speculative financial activities (Detzer et al. 2013), and culminating in the dismantling of Deutschland AG in the 1990s (Beyer and Höppner 2003). On the international level, capital account liberalisation after the 1970s and the proliferation of international trade and investment agreements during the 1990s, including the Europeanisation process,

[8] For example, KfW financed sales to Eastern Airlines in 1978, one of the weakest American airlines, which later became insolvent. (Harries 1998, 136)

presented a new set of challenges.

Figure 1: KfW's assets and lending commitments, as percentage of GDP



Source: KfW annual reports, various issues, Federal Statistics Office.
Note: Commitments include loans, grants and guarantees, exclude advisory and services; DM GDP calculated at the official exchange rate of 1 EUR=1.95583 DM for the time period between 1965 and 1999.

KfW not only survived the 'neoliberal turn', but became even more important, scaling up its operations dramatically, especially after the 1990s (see figure 1). KfW faced a series of increased demands for its funds during the post-80s era. As the large private banks of Deutschland AG, which had previously played an important role in providing long term-finance to German industry, moved away from real-economy lending towards fees based and speculative activities after the 1970s (Deeg 1999 p. 80), KfW stepped in to fill the gap. KfW also faced increased demand for its popular 'M' programs[9] (Harries 1998, 162) as financial liberalisation caused a deterioration of credit conditions for SMEs (Bluhm and Schmidt 2008, 34; Deeg 1999 p. 60). KfW's importance increased even faster during the 90s and 2000s (see figure 1), as the financial sector was further liberalised, Deutschland AG was dismantled, and German Reunification created fresh demand for KfW funds (KfW 1990-4). After the 2008 financial crisis, KfW took over Deutschland AG's stabilisation function and played an important countercyclical role, causing demand for its funds to reach new heights.

[9] These programs have been important in financing SME investment since the 1980s; in 1985 the KfW financed 45% of total investment of manufacturing Small enterprises (revenues less than 5mn DM), and 20-25% of medium firms (revenues between 5-10 mn. DM) (Götte 1988)

Domestic lending was ramped up in the years after the crisis to ensure real economy firms a stable supply of long-term credit, and rescue ailing firms (figure 1; KfW annual reports, various years). In the context of the challenges posed by economic globalisation mentioned above, how did KfW achieve this impressive increase in the size of its operations?

Managing the funding crisis: KfW goes to the international financial markets

At the same time as KfW faced an increased demand for its financing, concerns over budget deficits and inflation became more salient after the 1980s, and intensifying in the 1990s with the introduction of the Maastricht Criteria, resulting in a funding problem. KfW resolved this dilemma by using its state guarantee to switch its major funding source from budgetary funds to low-cost borrowing on international and domestic capital markets, since KfW's lending from funds raised on private markets did not contribute to the government debt[10]. KfW's capital market operations after the 1980s were so successful that it was able to fund a massive expansion, despite domestic fiscal constraints. KfW was one of the first national development banks to follow in the footsteps of the supranational World Bank and European Investment Bank in tapping into international capital markets (Licari 1969),

During the post-war era KfW relied mainly on Federal Government and European Recovery Program (ERP) funds,[11] with public funds making up over 60 % of KfW's total funding volume (KfW annual reports, 1950-1970), and privately raised funds playing only a supporting role (KfW 1966, 68). Even though these pressures to control government spending increased through the late 1970s (Walter 1992), the Federal government was cautious about allowing KfW to raise funds from international sources. Until the mid-80s, KfW was confined to raising private funds domestically in the underdeveloped German capital markets (Harries 1998, 103), on which KfW could only issue intermittently and expensively (KfW 1965, 1974), which limited the scale of its operations.

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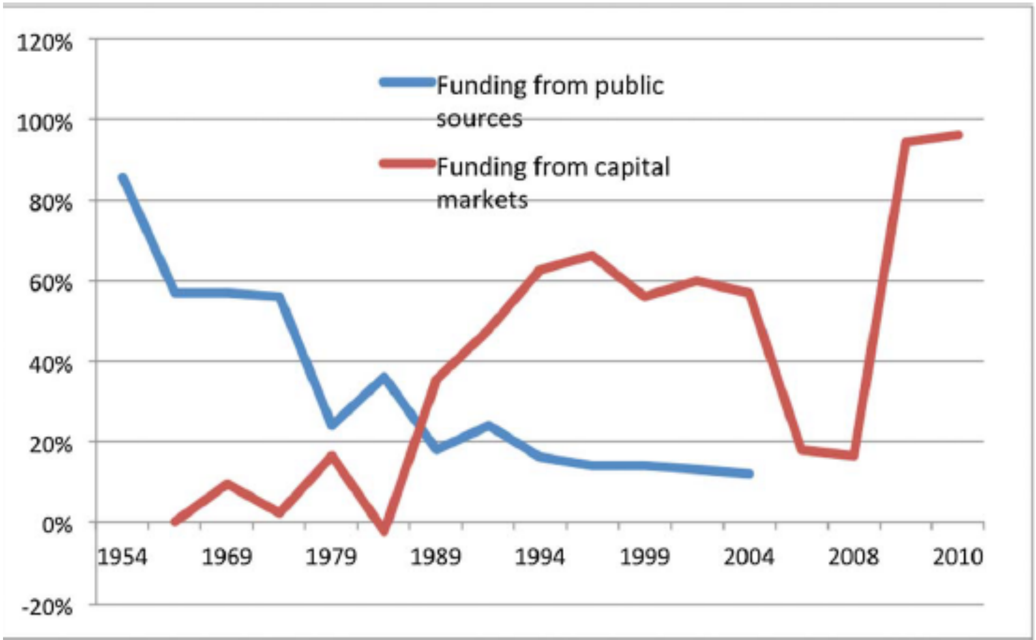
[10] Self-financed loans made by KfW do not count towards core Federal budgets, and only the direct allocation from Federal or ERP budgets, have to be recorded in the State Subsidies Reports (*Subventionsberichte der Bundesregierung)* as an officially declared subsidy (Bundesbank 2000, 18).

[11] The ERP fund was set up under the Marshall Plan, but when the Marshall plan ended in 1953, it was turned into a revolving fund for long-term investment loans, which grew over the decades due to the interest being accrued (KfW annual reports, various years).

The breakdown of Bretton Woods in the 1970s contributed to the Federal government abandoning its prior caution and allowing KfW to step up its efforts to issue bonds on foreign capital markets by the mid-80s (KfW 1984, 20). This was seen to have additional advantages; borrowing costs were much lower compared to domestic markets, and it was expected that KfW would play a leading role in opening up foreign capital markets for other German firms (KfW 1987, 51-52). In order to gain credibility on international markets, KfW was one of the first German institutions to apply for a Moody's and Standard and Poor's credit ratings in 1986, and received the highest possible 'AAA' (KfW 1986,4). In 1987 KfW was the first German enterprise to be registered by the US Securities and Exchange Commission (SEC), allowing it to issue bonds in the US market. By the late 1980s, ad hoc foreign currency borrowing and hedging were replaced by a permanent foreign currency book in US Dollars, Yen and Swiss Francs (KfW 1989, 14) and by 1990 foreign currency loans accounted for over half of KfWs export finance (KfW 1990, 46).

Figure 2: KfW sources of funds as percentage of total funding



Source: KfW annual reports, various years
Note: other funding sources include private bank loans and credit linked notes. Data on public funding is no longer published in the annual reports after 2004; Figure is negative in 1984 due to KfW having to buy back its own bonds to keep the market price up; the brief drop in capital market funds in 2007 and 2008 is due to risk aversion during the financial crisis.

The period of convergence following Maastricht Treaty of 1992 in the run-up to the introduction of the Euro gave new impetus to the German government to reign in spending to conform to the debt rules of the Stability and Growth Pact. Conducting industrial policy through KfW's self-financed loans became even more attractive, because according to European statistical conventions, as long as financing decisions did not require explicit government endorsement for projects, these loans did not count towards the 3 % deficit-to-GDP ratio, despite their government guarantee (European Communities 2002; European Commission 2015, 8).

The introduction of the Euro in 1999, and its subsequent acceptance as a major international reserve currency proved to be a turning point for KfW. A much wider range of European and international investors were now interested in bonds in its home currency, which it could also use to fund domestic programs, guaranteeing it a long-term, stable source of cheap funding. KfW's official funding strategy became focused on 'repositioning KfW as a European benchmark issuer in the global capital markets' (KfW 2000, 9). The 2001 merger with the state-owned Deutsche Ausgleichsbank (DtA), was motivated by improving KfW's position on international capital markets through larger issue volumes (KfW 2000, 58).

By the 2000s, KfW considered that it had 'earned itself a first-class position as a global issuer' (KfW 2005, 84). Indeed KfW's capital market issues suffered only very briefly during the 2007/8 financial crisis, and after the Eurozone crisis, KfW's bonds were seen as a safe haven asset due to the German government guarantee, with KfW easily achieving its targeted funding volume (KfW 2010, 93)[12]. The interest rates it borrowed at were now so low, that the profit it earned on other parts of its business was by and large sufficient to cross-subsidise its preferential loans without direct government support. This minimised the need for public funds, and the volume of KfW funds coming from the Federal Budget and ERP funds continued to gradually decline in importance (see figure 2). In 2007 ERP fund in the amount of 12.5 bn. Euro was re-organised and a large part was given to KfW as an equity injection. After that, KfW began to raise nearly all of its funds on the international capital markets, in over 16 different countries and all major currencies, with only a small percentage coming directly from the ministries (KfW 2008- 2015).

Coping with international trade finance regulations: KfW's export finance under

[12] While bringing benefits, KfW's reliance on international capital markets might also create new risks. If the German government is downgraded, or if the Euro ceases to be seen as a strong currency.

Neoliberalism

Another important challenge to KfW's operations was the rise of international trade agreements. The OECD Arrangement on export financing of the late 1970s, and the creation of the WTO in 1994 limited subsidised export finance, KfWs main tool of post-war export promotion. Thanks to its ability to raise finance on the capital markets, KfW could lend at what it claimed were 'market rates' and circumvent OECD rules. Despite KfW not being completely immune to challenges at the WTO, especially from equally large trading powers, or key emerging markets, KfW's activities did not come under existential threat due to Germany's market power, which was augmented by membership in the EU[13], and aggressive strategies at the WTO.

The OECD Arrangement

Efforts to limit aggressive competition between industrialised countries to give their exporters advantages through the provision of subsidised export credit culminated in the OECD 'Arrangement for Officially Supported Export Credits' of 1978, henceforth the 'Arrangement' (Moravscik 1989; Mulligan 2007; OECD 2008). Common limits were placed on the terms under which government-subsidised or 'official' trade credits could be granted, including minimum interest rates, maturities, down payments, and repayment schedules, in an attempt to 'encourage competition among exporters' (OECD 2008, 5). Various amendments were made, which reduced the amount of subsidy allowed, and created additional sector specific rules ('Sector Understandings') (Mulligan 2007; OECD 2008).

While KfW continued providing state-subsidised finance in its capacity as an official export credit agency (ECA)[14], it also exploited a number of loopholes in the 1978 and subsequent Arrangements in order to maintain an edge over its OECD competitors. Until the 1970s, all of KfW's export financing was partially subsidised by Federal government funds (KfW 1970, 44). As Arrangement rules were tightened over time, KfW increasingly began to fund export loans mainly through the capital

[13] The EU is referred to as the European Communities at the WTO

[14] An ECA is a public entity that provides government-backed loans, guarantees and insurance to corporations from their home country that do business abroad

market, without any direct Federal or ERP subsidies, and lent them at what it claimed were 'market rates', because such lending was not bound by Arrangement rules. The US EXIM bank, which monitors competition in export promotion, terms this capital market financed export lending 'market window activity' and defines market windows as 'government-owned institutions that claim to offer export credit on market terms, thereby circumventing the OECD Arrangement rules' (US EXIM Bank 2009, 79). While all major industrialised countries, and large emerging market economies have ECAs (Hopewell 2017), Germany and the Canada are the only two that have had long-standing market windows (Rodriguez 2001, 11).

KfW's market window finance gave it advantages over both competing official ECAs and private commercial banks. KfW's government guarantee[15], exemption from taxes on its profits, and no obligation to pay dividends to its shareholders, translated to lower funding costs, which enabled it to offer cheaper loans, and take more risk than commercial banks[16] (Mendelowitz 2001, US EXIM Bank 2009, 79). On the other hand, KfW's market window was not subject to Arrangement reporting requirements, giving it more flexibility than official ECAs (Rodriguez 2001). The US EXIM bank estimated that by 1999, 86 % of KfW's export financing operations were conducted on a market window basis, and that KfW was the largest market window in the world (Rodriguez 2001, 11).

KfW's continued promotion of the large civil aircraft sector after the post-war era provides a good example of how the Arrangement did not prevent KfW from giving German and European firms advantages over their competitors. In 1986, a Large Civil Aircraft Sector Understanding (LASU) on export credits was signed between the European ECAs and US EXIM bank, as part of the OECD Arrangement (OECD 2008). LASU provided minimum terms and conditions for subsidised finance by ECAs in order to prevent competition between Airbus and US manufacturers on concessionary financing. It also established an informal 'Home Market Rule' which prohibited European ECAs from financing Airbus sales into US markets, and vice versa (Berg and Verspyck 2011).

KfW circumvented these rules by providing export loans to Airbus on a

[15] The government guarantee for KfW's market window was explicit until 2008 when market and official window operations were conducted within the same legal entity. After 2008, KfW's market window operations became legally independent as KfW-IPEX, but still owned by the parent company, making the government guarantee implicit. This will be discussed further in the next section.
[16] Firms have reported that KfW offers market window financing a full basis point lower than commercial banks (Mendelowitz 2001, 175)

market window basis rather than as an official ECA[17] (KfW 1987; 1988, 31), making .Airbus's sales more attractive to foreign buyers than those of US aircraft manufacturers (KfW 1990, 50). In addition to being cheaper than private finance, KfW's market window finance was not bound by LASU conditions for official ECAs. While US EXIM was prevented by LASU 'Home Market Rules' from financing Boeing sales in Germany, France, the UK, or Spain (KfW 1990, 50; Mendelowitz 2001, 181), KfW could finance Airbus sales the US market using its market window. KfW's market window could also support financing structures of 15-18 year maturities, while a 12 year limit was placed on EXIM's financing under the LASU, and KfW was able to commit to support Airbus much earlier in the sales cycle, whereas due to the transparency requirements of the LASU, EXIM can only commit support after approval by the board (Mendelowitz 2001, 181). This enabled Airbus to capture market share from Boeing, and thus increase economies of scale, leading to significant increases in long-run productivity. According to Scott Scherer, Vice President of Boeing Customer Financing, one such example is when Boeing lost the important 1997 'Latin Trio' Trio' sale of aircraft to three Latin American Airlines to Airbus, not because of superior quality or price, but because of KfW's better financing conditions (Scherer, cited in Mendelowitz 2001, 181).

Thanks to KfW and other member states' financing, Airbus emerged as a serious challenger to Boeing by the late 1980s, increasing market share to 25 percent by 1986 (Majumdar 1987, 501) despite its weak financial position[18]. Airbus did not become competitive with Boeing until well into the 1990s (Golich 1993, 471), and finally overtook Boeing in terms of market share only in the early 2000s. The two have remained in a neck-to-neck battle since then (Thompson Reuters 2012, 2), helped by massive state subsidies on both sides. During the 2000s, KfW finance was provided specifically for design, development, and marketing of the new Airbus model A350XWB (WTO 2016). KfW's loan was only to be repaid if the new model was successful, thus enabling Airbus to upgrade its models by shifting the risks of innovation to the public sector (WTO 2016, 96). According to a WTO panel, Airbus would not have been able to launch its new models, had it not been for these subsidies

[17] By 1989, the majority of KfW's financing for Airbus was provided on a market window basis (KfW 1989, 41).

[18] Deutsche Airbus was on the 'verge of bankruptcy' in 1989, necessitating a rescue plan by the German government, which included KfW providing a DM 505mn capital infusion by taking a 20 percent equity stake in the company (WTO 2016, 267).

(WTO 2011, 558).[19]

KfW began to come under criticism during the early 2000, by US EXIM and others who claimed that market window activities fell outside the OECD Safe Haven, and therefore were in contravention of WTO law (US EXIM bank, various years). However, a lack of concrete evidence, since KfW is not required to release the terms of its individual market window deals, and the parties to these transactions are bound by confidentiality agreements, made it difficult to take action (Mendelowitz 2001; US EXIM 2005). Furthermore, many US companies were reluctant to provide EXIM evidence on KfW's market window activity because they had significant production facilities in Germany, and were therefore eligible to benefit from this finance (US EXIM 2005, 57). The financial crisis resulted in other countries ramping up their export credit provision, with Italy and the Nordic countries launching their own market windows (Hopewell 2017; EXIM bank, 2009, 2011, 2013). In this permissive environment, complaints from other ECAs against KfW were dropped. While organised US exporter groups had been calling for US EXIM to expand its scope in order 'fight fire with fire' and keep pace with its competitors (Bergsten 2015; Hopewell 2017), these efforts became paralysed by internal challenges from the Tea Party movement, fuelled by a prevailing market fundamentalist ideology and funded by billionaires like the Koch brothers (Hopewell 2017). In this environment, initiatives to become competitive with KfW were eclipsed by the struggle to simply keep US EXIM alive (Hopewell 2017, 583).

The WTO Rules

When the WTO was founded in 1994, the OECD countries negotiated a 'carve-out' for the OECD Arrangement. The Arrangement was incorporated into

[19] Musacchio and Lazzarini (2014) argue that development bank lending to firms that are already competitive, and therefore able to raise finance privately constitutes 'rent seeking' rather than industrial policy, because this merely subsidises the cost of capital, but does not increase productivity. We believe this argument does not apply to industries where there are sufficient scale economies. KfW financing remained vital to improving Airbus's productivity, even after it became internationally competitive, through enabling it capture market share, thus increasing economics of scale and long-run productivity. Separately, KfW financed risky technological innovation, which would not have been financed in private markets.

WTO law, which exempted those export credits issued in conformity with the Arrangement from the Subsidies and Countervailing Measures (SCM), under Annex 1 (K) of the SCM (Coppens and Friedbacher 2014). In effect, this meant that KfW's Arrangement conforming activities remained legal under WTO rules, and advanced economies were allowed to continue to provide subsidised export finance in those sectors important for them, while developing countries, many of which did not have ECAs, or did not export goods that benefitted from the Sector Understandings, could not provide such subsidies under WTO law (Chauffour et al. 2010).

Being a developed country development bank also meant that KfW was at an advantage when it came to the WTO DSM itself, as compliance is dependent on power relationships, determined by market size, given that the threat of bilateral retaliation is the underlying means of compensation in dispute settlement negotiations (Brown 2004). Developing countries often lack resources to bring cases to the DSM (Busch and Reinhardt 2003), and even if they do, they might lack enforcement capacity because their threat of retaliation may not be meaningful due to their smaller market size (Brown 2004, 60).

Germany has one of the poorest records among OECD countries of notifying specific subsidies to the WTO as required under Article 25 of the SCM (Thone and Dobroschke 2008, 1), and despite KfW's sizeable activities, only two disputes brought against the EU under the SCM have directly involved it: one brought by Korea, a key emerging market that used aggressive tactics at the WTO during the early 2000s, (Liao 2016) in the shipbuilding sector, and one brought by the other 'twin titan' of international trade (Garrett and Smith 2002), the US, in the aircraft sector.

In the case of shipbuilding, Korea brought cases against the EU's subsidisation of shipbuilding as retaliation for an earlier case the EU had brought against Korea's subsidisation of its own shipbuilding sector through the Korea Development Bank (KDB). In 2004 Korea brought case DS307, accusing the EU of unfairly subsidising its shipbuilding industry, and included the German government's guarantee of KfW's obligations on the list of measures it considered inconsistent with the SCM. Given the case was brought to prevent the EU taking future actions against the KDB, Korea did not follow up its request for consultations with the second step of requesting panel formation, allowing KfW's activities to continue unchallenged

(WTO 2010a; Europe Direct Contact Centre 2017[20]).

When the industry negatively affected by KfW belongs to a country with equal market power, namely the US, the challenge is more significant, but the EU is able to fight back through counter-suits, appeals, or procrastination on compliance with rulings that are not in its favour. In this case, membership in the EU makes continued industrial policy possible, because Germany alone does not have the market power to match the US. In the case of aircraft, the US and EU have been embroiled in a protracted tit-for-tat conflict at the WTO since 2004, when the US brought case DS316 against the European Communities for over 300 instances of subsidization of Airbus, and the EU retaliated by bringing two counter-complaints against the US for illegally subsiding Boeing. While KfW's market window activity was not included in the list of EU subsidies, KfW's 1989 equity investment in Deutsche Airbus was, and was found by the WTO Panel in 2010 to be a 'specific subsidy' in contravention of WTO rules since the capital was provided on non-commercial terms (WTO 2010b). Following an appeal by the EU, although the Panel reversed some of its findings in favour of the EU, it upheld its ruling with respect to KfW's equity investments (WTO 2011) and advised the EU to 'take appropriate steps to remove the adverse effects or… withdraw the subsidy' (WTO 2011, 612), though it was not specified how exactly this was to be done.

In 2016, the US brought a complaint that the EU had not only not withdrawn its subsidies in compliance with the Appellate body's ruling, but had expanded its subsidy program through the above mentioned LA/MSF program, including through a subsidized KfW loan (WTO 2016). The Panel did not find that the LA/MSF were in the more serious category of 'prohibited subsidies' as the US alleged, but did find them to be a 'specific subsidy', and also found in favour of the US with regards to the EU's non-compliance with the panel's previous recommendations, including on KfW's equity investments (WTO 2016, 572). However, the EU appealed this ruling on October 2016 (WTO 2017a), and the case is ongoing at the time of writing, without action having been taken to remove adverse effects or withdraw the subsidies relating to KfW's equity stake and loans. The counter-suit by the EU against Boeing also remains under review at the WTO, and has been subject to a similar process, with the Panel finding against the US in some instances, the US appealing the decision,

[20] Email correspondence on 10/17/2017

and also being accused of non-compliance with panel rulings by the EU (WTO 2017b).

The challenge of Europeanisation: Bargaining for Industrial Policy

The Europeanisation process presented another challenge for German industrial policy and public banks since many of its core laws were designed to minimise state intervention. Despite this, while EU membership did create some problems for KfW, it led to no fundamental change in KfW's activities due to Germany's position as regional hegemon in the EU, and KfW's use of creative accounting. Below we examine the most significant challenge of Europeanisation for KfW: the EU State Subsidies Law[21], which ruled KfW's market window operations to be illegal.

Enforcement of EU State Aid regulations prohibiting government support conferred on a selective basis to firms or sectors was weak until the adoption of the 1998 Regulation EC No 994/98, which was considered a 'major milestone' to strengthen regulations on state aid (Kassim and Lyons 2013, 9). This was clearly at odds with selective industrial policy, which by nature involves providing subsidies to certain sectors or firms over others.

As State Aid regulations became stronger, a number of 'block exemptions' to the state subsidies law were negotiated from 1998 onwards, which allowed member states to implement certain state aid measure in these sectors without ex ante approval by the commission (Blauberger 2009). These corresponded to areas to which KfW was already lending at the time, and by implication, those areas Germany was supporting as part of its industrial policy, including renewable energies, SMEs, regional development, and technology and innovation promotion, and infrastructure, allowing KfW to continue providing support in those areas. While the European Commission has a degree of control over the design of State Aid law, it is often unable to issue and enforce these laws over strong member state opposition (Blauberger 2009; Clift 2012) Given Germany's strong position in the EU, although

[21] Other important potential challenges included the Maastricht Treaty, the effect of which has already been discussed, EU Banking Regulations, and the post crisis ECB Single Supervisory Mechanism (SSM). Since KfW was not classified as a bank under German law, the latter two simply did not apply to it.

negotiation documents are not public, it is reasonable to assume that Germany played some role in negotiating exemptions in its favour.

In 1999, a more direct challenge emerged. The European Banking Federation filed a complaint against the German government's liability (*Anstaltslast*) and refinancing guarantee (*Gewährträgerhaftung*) for its public banks (Volberding, forthcoming). This led to a series of negotiations between the EU Directorate General Competition, the, Federal Ministry of Finance, VOEB, and KfW, in 2002 (KfW 2001), which resulted in 'Understanding 1 & 2' (*Verständigung* I & II), a direct application of EU State Aid Law to the German public banks. The Understanding stipulated that the *Sparkassen* and *Landesbanken* lost their state guarantees (Verständigung I), but the German Ministry of Finance managed to secure a number of clauses that enabled nine of the *Förderbanken* including KfW, to retain these advantages as long as they only carried out a defined list of permitted 'promotional' activities (Verständigung II, 2002, 4). If the Förderbanks were conducting any activities outside this remit, these were required to be hived off into a separate legal entity, where they could continue these activities without direct government guarantees and would be subject to competition law without exemptions (Seikel 2014; *Verständigung* II, 13).

'Promotional' activities included subsidised finance to sectors included in the State Subsidy Block exemptions mentioned above (*Verständigung* II, 11-13), so KfW's domestic operations were not affected. Subsidised export finance within the EU was not allowed (Ibid.), but this mattered little, as German exporters enjoyed low effective exchange rates compared to other countries using the Euro (Hall 2012). Outside the EU, KfW was allowed to operate as an official ECA, but its market window activity was not allowed unless the transaction took place in a consortium where a private bank acted as lead arranger (*Verständigung* II, 13). KfW was therefore forced to restructure its operations where its Understanding-compliant businesses were reorganised into five subsidiaries[22] and kept within KfW, while its market window activities were separated into the International Project and Export

[22] These were the *Mittelstand* (SME) bank, the *Privatkundenbank*, and *Kommunalbank* which lend to domestic SMEs, large corporations, and municipal governments, KfW *Entwicklungs* (development) Bank which finances projects in developing countries, and the DEG, which provides advice and technical expertise.

Finance (KfW-IPEX) bank, which became legally independent in 2008 (KfW 2001, 11, KfW 2008).

While it was expected that the Understandings would put an end of KfW's combination of market window and commercial activities, the restructuring proved to be ultimately cosmetic in nature From the point of view of KfW, the negotiations were a success as they ensured 'that we will be able to continue to support the German and European economies with the *entire range* of the products of the KFW Group' (KFW 2001, 11, emphasis added).

KfW retained tight control over the activities of its subsidiary, ensuring it could not function as a profit-oriented private bank. Officially, IPEX sees its mission as supporting KfW's promotional mandate, rather than to maximising profits; 'We consider ourselves to be a part of the statutory mandate and mission of KfW to strengthen the German and European economies for the long term against the background of advancing globalisation' (IPEX 2008, 15). Although the two entities are legally separate, high ranking KfW board members, as well as Ministry of Finance and Economics representatives have dominated the board of the IPEX bank since its inception, ensuring IPEX's activities are aligned with KfW's interests (KfW IPEX annual reports, various issues).

Furthermore, the use of creative accounting means that IPEX is able not only to carry out market window activities as intended in the Understandings, but also conducts KfW's international promotional activities on a 'fiduciary basis' (Standard and Poor's 2016, 5). In 2008, for example, over 40 % of IPEX's loan volume was made up of promotional activities conducted on behalf of KfW (KfW 2008, 93). In terms of export finance volume and sectoral focus, IPEX continues to focus on the industrial sector, including shipping, mechanical and automotive engineering, renewable energies, aircraft, and basic industries (KfW IPEX 2012, 28). In effect, IPEX acts as KfW's international financing arm, rather than as an independent company.

Finally, although it is meant to be a commercial institution, IPEX's status as KfW's subsidiary ensures that it continues to benefit from lower than market funding costs. IPEX's receives its financing almost exclusively from KfW, along with a liquidity guarantee (Standard and Poor's 2016). Although KfW claims it finances IPEX at 'market rates', that are calculated according to IPEX's ratings (IPEX 2008, 51), this is not strictly true because IPEX's ratings are better than they would otherwise be precisely because of this funding relationship (Moody's 2013; Standard and Poor's 2016). Standard and Poor's notes that key factors in boosting IPEX's rating to AA+ status are 'implicit benefits of ownership by KfW, especially in terms of funding and liquidity', and 'IPEX's status as a government-related entity (GRE) and our view of an extremely high likelihood of timely and sufficient support from the German government if needed' (Standard and Poor's 2016, 2-3).

GOING 'GREEN': INDUSTRIAL POLICY IN THE NEW MILLENIA

Despite the challenges discussed above, KfW, with the support of the Federal government, has retained its ability to conduct selective industrial policy in the 2000s, on both the domestic and the international levels. As table 1 shows, KfW's post-80s policy tools remain very similar to those during the post-war era, with the main difference being how they are funded. While specific sectors targeted have changed over time, the focus remains on high value added or technology intensive sectors with a high degree of linkages and spillover effects with the rest of the economy.

Table 1: KfW's industrial policy from post-war to present

	Postwar era (60s and 70s)	Post-80s era (90s and 2000s)
International sectoral focus	Industrial plant and machinery, aircraft, ships, basic industry	Ships, basic industry, aircraft , renewable energy plant and technology, industrial plant and machinery
Domestic sectoral focus	Capital goods, engineering, coal and steel, raw materials procurement, housing	Renewable energies, innovation, housing energy efficiency
Domestic policy tools	Provision of credit on preferntial terms, subsidised directed credit programs	Provision of credit on preferntial terms, subsidised directed credit programs
External policy tools	Subsidised export finance, subisidised project finance for outward FDI, tied and untied development aid	Subsidised export finance, 'market window'/commercial export finance, subisidised finance for outward FDI, untied development aid
Funding sources	Federal government and ERP funds	Capital market funds

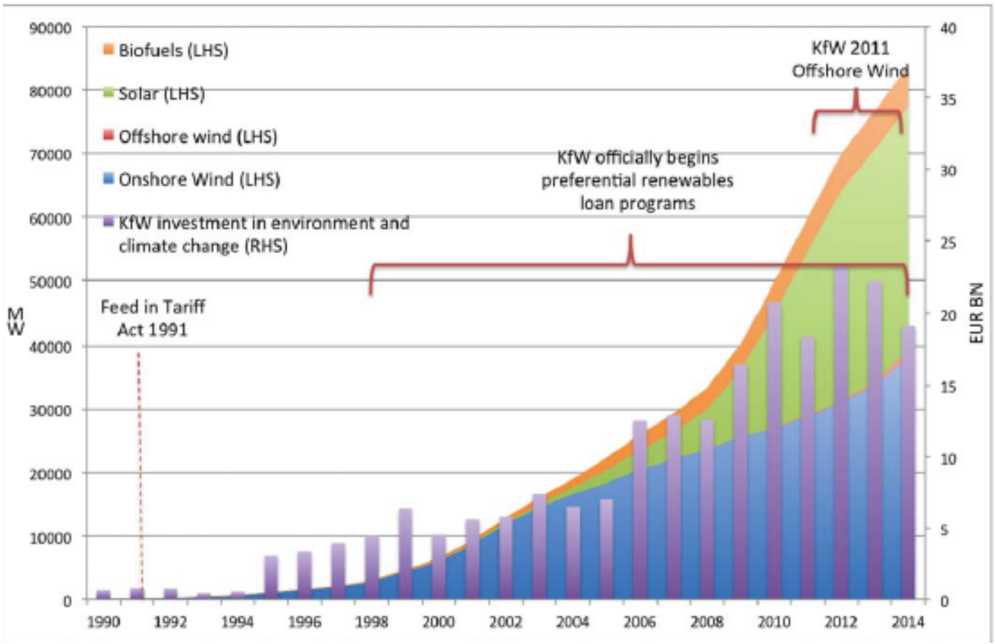
Source: KfW annual reports (1949-2015)

Although KfW covers many important financing needs including through its special programs for SMEs and innovation[23], the most compelling example of how it continues to conduct selective industrial policy in the 2000s is its crucial role in promoting the German renewable energies industry. Germany is widely touted as a success story in the promotion of wind and solar renewable energies. This spectacular rise in the use of renewable energies would have been impossible if left to market forces, due to the fact that renewables not only rely on costly new technologies, but also have to overcome a massive sunk cost advantage of incumbent technologies, such as fossil fuels (Mazzucato 2013, Connor 2003). Despite Denmark having the first mover advantage in the renewables sector (Connor 2003), Germany successfully caught up during the late 1990s, and 2000s. Domestic installed capacity has grown exponentially (figure 3), and by 2014, three out of the top ten wind turbine manufacturers were German companies, Enercon, Siemens, and Nordex, with a combined world market share of 21.5 % (Energy Digital 2014). The German strategy has been to focus initially on production for the domestic market, and then to move towards export promotion, since about 2002/3 when the domestic market began to reach saturation (Lund 2009). Key policy tools were the introduction of feed-in tariffs[24] in the late 1990s to promote domestic demand (Lund 2009), and provision of subsidised long-term finance to promote investment, mainly by KfW. A KfW report states that 'Since the Federal Government launched the energy turnaround in 2011… KfW has significantly expanded its promotion in these areas, and will continue to lend impetus as a partner to the Federal Government' (KfW 2013, 65).

Figure 3: Installed renewables capacity in Germany and major promotional programmes

[23] For example, the KfW Innovation Programme for SMEs was 'intended to round off the Federal Government promotion of research and development, R& D), which is strongly oriented to basic research… [KfW's] loan finance for application-oriented R&D will lead to a helpful solution for the company, if the company cannot fund all the work itself as is the usual practice' (KfW 1994, 28).

[24] These provide renewable energy producers a guaranteed price at which they can sell to the energy supplier, providing the producers with long-term security to encourage investment. The ultimate cost is passed on to the consumer.



Source: Installed capacity data from AGEE-Stat database. Policy data from IEA/IRENA database, Lauber and Pesendorfer (2004)

Since renewables began in Germany as an 'infant industry' (Connor 2003) private bank finance was not initially forthcoming (Griffith-Jones 2016). KfW therefore provided a very significant portion of total domestic renewables finance in Germany, especially during the mid-2000's (KfW annual reports). Including co-financed projects[25], it is estimated that about 80 % of wind energy plant development, and 40 % of total renewable energy development in Germany has been financed by KfW (KfW annual report 2011). This finance is generally available as part of one of KfW's special renewable energies programs, where long term credit is provided at subsidised interest rates and other favourable conditions (see figure 3). These massive domestic 'state subsidies' did not go against EU Law, because investment aid for the promotion of energy from renewable sources became one of the sectors covered in the General Block Exemption Regulations.

Since the mid-2000s, a key aspect of renewables industrial policy has been to increase economies of scale by exporting German renewables products to developing countries.. IPEX has been crucial in helping large German renewable firms become and remain competitive internationally through direct provision export and project finance. Given that an OECD sector understanding on Renewables was introduced on a trial basis in 2005 (Mulligan 2007), IPEX can provide this aid at favourable

[25] Which in many cases would not have been possible without KfW financing, as KfW plays the role of lead bank in consortium lending.

conditions both in its capacity as an official ECA, and through its market window. KfW *Entwicklungsbank* and German Investment Corporation (DEG) support IPEX's direct promotion of German firms by financing renewables projects in developing countries in order to increase the demand for German renewable firms technology exports (KfW annual reports, various years). By 2011, KfW was the most important promoter of renewable energies worldwide, together the World Bank (KfW annual report 2011)

Although Germany has used extensive state-support to develop its own renewables industry, it has been active (along with other EU countries and the US[26]) in attempting to kick away China's ladder to do the same. In 2009 German solar companies SolarWorld and Coenergy[27] requested the EU to conduct an anti-dumping investigation of China's solar exports (Lewis 2014, 16). China has still use similar tactics to the US and EU to use state subsidised finance to accomplish its industrial policy goals (Lewis 2014, 18-20). This indicates that a handful of key emerging markets with large domestic markets and significant legal resources are able to provide financial support similar to the KfW, despite developed country opposition.

CONCLUSION: POWERFUL STATES MAKING ROOM TO MOVE

While the post-1980s era of 'neoliberal globalisation' is typically associated with the 'roll back' of the state from economic life, the evidence presented in this paper shows that the role of state intervention in German finance has been important not only during the post-war era, but has gained even more importance after the 1980s. While post-1980s financial globalisation is usually associated with the end of state-directed finance, despite official rhetoric about curtailing government expenditures and scaling back state intervention, this was not the case in Germany, even as some parts of the financial system were liberalised. Ironically, the increase in KfW's size was made possible by its strategic use of financial globalisation; KfW's borrowing on international and domestic capital markets enabled it to overcome the mounting funding crisis it faced since the 1970s, since funds raised in this way did not count towards the government debt. It seems that, in the case of Germany, financial

[26] The US coalition of solar manufacturers (CASM) that initiated investigations against China was led by the US arm of the German SolarWorld (Lewis 2014).
[27] A coalition of European solar producers called ProSun was later formed to lead the filing of complaints at the WTO.

globalisation has had important 'state augmenting' effects through enabling selective industrial policy.

Findings on KfW's post-1980s role in selective industrial policy challenge the assumption made in some of the literature on industrial policy that financial globalisation and the proliferation of trade and investment agreements has made many forms of industrial policy non-viable. Not only did the external challenges of international and regional agreements fail to render KfW defunct, KfW retained its core functions and continued to prioritise high value added manufacturing after the 1980s. As KfW's strong and successful industrial policy towards renewable energies and its continued support of Airbus show, many routes still remain open to advanced countries wishing to conduct such sectoral promotion. However, as the contrast with Hopewell's (2017) account of the US EXIM bank shows, this is conditional on the domestic politics being supportive of such an institution.

More generally, the German case shows that as developing countries' policy space has been curtailed, powerful countries benefit from the unequal nature of the international economy, and are able to both shape international economic agreements, and exploit loopholes in them to their advantage. KfW's ability to continue funding itself cheaply on the international capital markets remains closely tied to the German government's high credit rating, and to the Euro's status as an international reserve currency. This means that while such funding options are available for key advanced economies, this is not a path open to developing countries, which cannot rely on international financial markets for stable and low cost borrowing due to poor ratings and soft currencies.

Similarly, the carve out for the OECD Arrangement in the WTO, gives Germany, an Arrangement member, advantages over developing countries. In addition, KfW exploited loopholes in the Arrangement to use 'market window' financing to maintain a competitive edge over other Arrangement members. Although KfW has faced significant challenges at the WTO, these have not rendered it defunct, thanks to Germany's membership in the EU, which gives it market power equivalent to that of the US. In Europe, Germany's status as a regional hegemon meant that the EU State Subsidies Law reflected its preferences to some degree. Although some compromises with made with regards to other German public banks, the German government negotiated a deal that allowed KfW to continue conducting its core activities largely unimpeded. All in all, it seems that, contingent on their domestic politics, industrialised countries have a number of advantages over developing countries when it comes to conducting selective industrial policy despite the constraints of the international economic system.

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