Federal Competition Authority

Position paper - Macroeconomic Effects of Mergers in the Context of the COVID-19 Crisis

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wettbewerb@bwb.gv.at.

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1 Introduction[1]

(1) The COVID-19 pandemic and the restrictions put in place to deal with it have triggered a **global economic crisis**. Fiscal policy measures are the instruments of first choice to mitigate the impacts of this crisis. At the same time, it is to be ensured that state aid does not distort competition, create barriers to entry or result in overcapacities.

(2) The measures taken by the authorities to contain the COVID-19 pandemic could also lead to increased merger activity ("**shutdown mergers**") in the future. It would not be appropriate to relax merger control for shutdown mergers (or other fields of competition law). The approval of large numbers of anticompetitive mergers could **damage the structure of the Austrian market** and impair **Austria's economic development in the long run.**

(3) The present handout highlights the macroeconomic effects of market power, and explains how aquisitions of financially distressed companies are assessed. The consequences of any divergence from these criteria are discussed. Generally, anti-competitive mergers have adverse effects on macroeconomic development, while pro-competitive mergers benefit the overall economy.

(4) It follows that,
   (i) by preventing the accumulation of market power, Austrian merger control makes a positive contribution to our country's macroeconomic development,
   (ii) even against the background of the COVID-19 crisis, merger control is to be conducted in accordance with objective criteria and
   (iii) no additional macroeconomic assessment of mergers is required. The instruments of cartel law remain unaffected by this.

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[1] Please note that the position paper only reflects the opinion of the AFCA and has no binding effect with regard to Austrian or European authorities and courts, specifically the Cartel Court and Supreme Cartel Court, the ECJ, the European Commission or the Federal Cartel Prosecutor acting in their capacity as official party.

2 Macroeconomic effects of market power

(5)   Merger control investigates the creation of market power on the relevant product and geographical markets, where the companies involved in the merger encounter each other as competitors, customers or suppliers. It therefore represents a form of *partial equilibrium analysis*.

(6)   From a macroeconomic point of view, all markets influence each other directly or indirectly. Macroeconomic effects are therefore frequently investigated in the course of a *general equilibrium analysis* that covers labour markets in particular. A simple general equilibrium model with a labour market and a product market featuring oligopolistic competition is derived in **Annex ./A**.

(7)   In this model, an increase in market concentration leads to a higher average profit margin (markup μ). This has the following **macroeconomic effects**:

- Reduction of gross domestic product (GDP): The amount of value created by the economy falls, and consumption declines.[2]
- Reduction of overall employment (L): Since fewer consumer goods are produced, labour demand shrinks and the employment level falls. In the case of a merger, the labour demand of both the companies involved and their competitors would go down.[3]
- Reduction of the wage share (LQ): Shrinking labour demand also leads to falling (real) wages. As a result of this, the wage share declines as a whole, that is to say wage income contracts as a proportion of GDP, while companies' profits expand as a proportion of GDP. Since, as a rule, stocks and shares tend to be concentrated in the hands of the highest income brackets, this is indicative of upwards redistribution. There is consequently a reduction in the purchasing power of the majority of consumers.[4]

(8)   It is also possible to include further production factors such as **capital** in this model. An increase in market power would then also lead to a reduction in investment and

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[2] In this simple model, market power decreases demand, which affects macroeconomic outcomes. Baqaee and Farhi (2020) investigate the effects of market power on the US economy in a very general setting, also emphasising the impact of market power on the distribution of productivity, which in turn reduces GDP.

[3] Gugler and Yurtoglu (2004) study mergers in Europe and the USA between 1987 and 1998. European mergers reduced the merging parties' demand for labour by an average of 10%. In contrast to this, mergers in the USA did not, on average, lead to any change in the companies' employment levels. This difference was attributed to the more flexible employment laws in the USA. The impacts on labour demand among the companies' competitors, and on upstream and downstream markets are not taken into consideration in this study.

[4] The results arrived at with this model are consistent with recent empirical investigations; cf. Autor et al (2020) and De Loecker et al (2020).

returns on (debt) capital, in other words interest rates.[5] An increase in market power therefore results in macroeconomic disadvantages.

Market exits, state aid and mergers

(9)   In this model, more efficient companies choose to set lower prices and consequently hold higher market shares. However, the whole cost advantage is not passed on to consumers. Large companies therefore earn higher profits as well.

(10)   If companies have **fixed costs** that are not dependent on the volume of production, they have to attain a minimum efficient scale to cover these fixed costs. Otherwise, they are forced to exit the market. If large companies have particularly high fixed costs (e.g. very high overheads on account of a bloated administrative structure), situations may occur in which even companies that produce efficiently have to leave the market.[6]

(11)   If inefficient companies receive **state aid** in order to prevent them exiting the market, and continue their operations on the same scale, this results in inefficient companies holding larger market shares than are merited by their productivity. This lowers the average productivity of the entire economy and so gross domestic product. At the same time, overcapacities are created that also endanger the survival of more efficient companies. Finally, subsidies have to be financed out of taxes sooner or later. This reduces households' disposable income and the demand from other companies.

(12)   **Mergers** that are intended to prevent inefficient companies exiting the market also lead to reductions in average productivity. If there are barriers to market entry, circumstances may arise in which market power is cemented and customers have to permanently finance the preservation of inefficient companies.

(13)   Apart from this, **anticompetitive exclusionary strategies** may force efficient companies to exit the market. Companies with market power are able to prevent smaller companies from reaching an efficient minimum size, by means of predatory pricing for example (cf. Fumagalli et al (2018)). Mergers may also enable a company to prevent competitors from growing, and therefore ultimately drive them out of the market.[7]

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[5] Cf. Gutiérrez and Philippon (2017) on the empirical connection between market power and investment, and Barkai (2019) and De Loecker et al (2020) on market power and returns on (debt) capital. Motta and Tarantino (2017), and Federico et al (2018) draw attention to the circumstances in which mergers have negative impacts on investment and innovation.

[6] Cf. Baqaee, D. R. (2018), "Cascading failures in production networks", *Econometrica*, 86(5), 1819–1838.

[7] European Commission, Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (Horizontal Guidelines), *OJ C* 31/03, 2004, para. 36.

Production networks

(14)   In practice, companies not only employ exogenous production factors such as labour, but also **intermediate products** that are produced by other companies. Grassi (2017) develops a model in which companies purchase products from an arbitrary number of markets that form a production network.

(15)   The integration of a market into a production network exacerbates the effects of market power: an increase in the profit margins on one market leads to double marginalisation[8] on the downstream markets and a reduction in factor demand on the upstream markets (cf. also Grassi and Sauvagnat (2019), and Baqaee and Farhi (2020)). A merger may therefore also affect **employment on upstream or downstream markets**.

Frictions and adjustment costs

(16)   The models discussed above may be expanded to allow for how changes in the employment of factors (labour, capital, intermediate products) are associated with **delays** and **adjustment costs**.[9]

(17)   Empirical investigations into the impacts of natural disasters show that companies have difficulties replacing existing supply relationships in the short term. For instance, following the 2011 Tohoku earthquake in Japan (which set off the tsunami that ultimately caused the Fukushima disaster), supply chains were disrupted throughout the country. In the assessment of Carvalho et al (2016), search frictions and relation-specific investments hindered the immediate reconfiguration of supply chains. Averaged across the companies in their sample, the disruption to supply chains was comparatively small (2% of annual turnover growth), in particular in comparison to the average volatility of company growth. However, these effects were intensified by the way shocks propagated through the production network. Nonetheless, it was possible to compensate supply chain disruptions relatively rapidly. Three months later, industrial production outside the region where the earthquake took place was higher than the level reached the previous year. Even in the region affected by the earthquake, production losses were concentrated in the first three months after the earthquake, and within a year industrial production rose again to nearly the previous year's level.

(18)   Empirical investigations also show that changes in the capital stock and the employment level are linked with adjustment costs and delays. This suggests the

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[8] Double marginalisation is found if the markups of independent companies on markets along the supply chain are higher in total than the markup of a vertically integrated company.

[9] The delayed adjustment of prices or (more rarely) wages and the frictions that result from this are defining elements of dynamic neo-Keynesian equilibrium (DNK) models. Empirical investigations indicate, however, that companies are able to adjust their prices rapidly, and price stability is more likely to result from the inertia in factor employment (Altig et al (2011)).

magnitude of the adjustment costs and the duration of the delays should not be overestimated.[10] The COVID-19 crisis especially has shown how quickly companies are able to adjust the size of their workforces.[11] When looked at on a quarterly or annual basis, frictions are therefore no longer a dominating factor.

International trade and regional effects

(19) **International trade** can lead to situations where the harm and benefits of market power are felt in different economies. This is the case, in particular, if all a company's customers and suppliers are located abroad, only foreign citizens are employed and only the profits are transferred back home, thus increasing gross national income (GNI). However, where domestic customers, suppliers or employees are also affected, market power causes harm to these groups. It is also to be taken into consideration that, thanks to international supply chains, it is possible for price increases on upstream products in foreign economies to eventually have repercussions for Austrian customers and consumers.[12]

(20) **Regions** may also be affected to a varying extent by market power, for example if a company provides employment in a structurally lagging region, but sells its products throughout Austria. Here too, it is to be borne in mind that market power ultimately leads to a reduction in factor demand and, in particular, the employment levels of the companies in question, as well as suppliers and customers.

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[10] Cf. Hall (2004), and Groth and Kahn (2010). However, the complexity of the products produced and the flexibility of the labour markets may also result in sectoral and national differences; cf. Chor (2010), Cunat and Melitz (2012), and Nunn and Trefler (2014). Cf. also Gugler and Yurtoglu (2004) for an analysis of the employment effects of mergers.

[11] Public Employment Service Austria (AMS), *AMS Spezialthema zum Arbeitsmarkt: Auswirkungen der COVID-19 Krise auf den österreichischen Arbeitsmarkt,* March 2020, https://www.ams.at/arbeitsmarktdaten-und-medien/arbeitsmarkt-daten-und-arbeitsmarkt-forschung/berichte-und-auswertungen.

[12] Empirical investigations show, for example, that (unlike their US counterparts) German employees have profited greatly from competition with China; cf. Dauth et al (2016) and Autor et al (2013).

3 Approvability of competition-relevant shutdown mergers

(21)   The substantive test for Austrian merger control is the *"creation or strengthening of a dominant position"* (Paragraph 12(1) Federal Cartel Act (KartG)). In the course of a competition assessment, consideration is also given to effects that prevent the creation of market dominance. In this respect, mention is to be made, in particular, of *market entries, efficiency gains* and *countervailing demand power*. These balancing factors are to be reviewed objectively.[13]

(22)   Furthermore, even though it would create or strengthen a dominant position, a merger may be approved if it satisfies the criteria for the acceptance of a **failing firm defence** (*"rescue merger"*). The concept of the failing firm defence originated in US competition law, and has now been incorporated into many other merger control regimes.

(23)   In *Kali+Salz/MdK/Treuhand*, the European Commission (EC) focussed its assessment of a failing firm defence on the causal link between the merger and the creation or strengthening of market dominance. According to the *Kali+Salz* criteria posited by the European Commission, a **failing firm defence** is accepted if it is found that
   (i)   the acquired undertaking would in the near future be forced out of the market if not taken over by another undertaking,
   (ii)   there is no less anticompetitive alternative purchase and
   (iii)   the acquiring undertaking would gain the market share of the acquired undertaking if it were forced out of the market (*"absorption criterion"*).[14]

(24)   The European Court of Justice (ECJ) has adopted the criteria set out by the European Commission in its *Kali+Salz* decision. At the same time, it was held that the absorption criterion ultimately described a duopoly situation. The criterion was therefore found to be a sufficient, rather than a necessary, precondition for a failing firm defence.[15] In *BASF/Eurodiol/Pantochim,* the European Commission addressed this qualification and, supplemented the absorption criterion with an *"assets criterion"*, according to which "the assets to be acquired would inevitably exit the market if not taken over by another undertaking." At the same time, it was ruled in emulation of the US Supreme Court's *General Dynamics* decision[16] that the application of the concept of the failing firm defence presupposed, *"that the deterioration of the competitive structure through the merger is at least no worse than in the absence of the merger"* (*"deterioration criterion"*).[17] The *BASF* criteria

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[13] Cf. e.g. Horizontal Guidelines, paras. 89–91.

[14] European Commission, 14 December 1993, IV/M.308, *Kali+Salz/MdK/Treuhand*, paras. 71–72;

[15] European Court of Justice, 31 March 1998, C-68/94 and C-30/95, *France, SCPA and EMC/Commission*, paras. 91–92.

[16] US Supreme Court, 1974, 415 U. S. 486, 507, *United States/General Dynamics*.

[17] European Commission, 11 July 2011, IV/M.2314, *BASF/Eurodiol/Pantochim*, paras. 142–143.

were included in the Horizontal Guidelines, where the absorption criterion is treated as a subcategory of the assets criterion that is essentially to be assessed in the light of the deterioration criterion.[18]

(25) If just one **part of a company** fulfils the criteria for a failing firm merger (*"failing division defence"*), the European Commission generally applies the *BASF* criteria as well. When this is done, "particularly high standards" are placed on the evidence that there will be no causal link with a deterioration in the competitive situation, although these standards are not defined any more precisely.[19] Körber (2014) suggests that the following two criteria be applied:

(i) It must be established credibly that the division is genuinely threatened by failure, that is to say there is no "cheating" going on. According to the European Commission, it is necessary to distinguish carefully between accounting losses and real economic losses.[20]

(ii) The companies in question have to establish credibly that there is a serious intention to actually close the unprofitable division in the foreseeable future, in other words that there are no strategic reasons for the division to be kept afloat even if the merger fails. The seriousness of their intention may be established credibly by a decision to this effect taken by the executive management or shareholders, or an expert economic opinion.

(26) The Austrian Supreme Court of Justice (OGH) has recognised the European Court of Justice's *Kali+Salz* criteria for the **failing firm defence**.[21] In the spirit of the principle of substance over form, it appears appropriate to apply the *BASF* criteria (*assets criterion* and *deterioration criterion*) in favour of the merger parties. The Austrian Federal Competition Authority (BWB) has also accepted the *failing division defence* in the past, in which respect it has drawn upon the *BASF* criteria as well.[22]

(27) It is advocated in the literature that, as part of the market dominance test, rescue mergers are to be examined by looking at their causal effects.[23] This would also correspond to the approach taken by the European Commission. In the interests of completeness, it may be mentioned that the justification of **improving competitive conditions** (Paragraph 12(1)(2) Federal Cartel Act) was modelled on the wording of the balancing clause of Paragraph 36(1)(1) German Act against Restraints of Competition (GWB). As a matter of principle, it would therefore also be possible to examine the rescue merger as a justification.

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[18] Horizontal Guidelines, paras. 89–91.

[19] European Commission, 27 May 1994, IV/M.993, *Bertelsmann/Kirch/Premiere*, para. 71.

[20] OECD, Roundtable Failing Firm Defense, Submission by the European Commission, DAF/COMP(2009)38, 2009.

[21] Austrian Supreme Court of Justice, 4 October 2010, *16 Ok 6/10 Holzhandel*, point 5.

[22] Cf. for instance BWB/Z-3707, *Airbus SE; C Series Aircraft Limited Partnership*.

[23] Urlesberger, "§ 12 KartG", para. 14, in Petsche, Urlesberger and Vartian, *KartG*.

(28)   The justification of **international competitiveness** has no direct equivalent in European or German merger control. Pursuant to Paragraph 12(2)(2) Federal Cartel Act, a merger is to be approved if it is necessary and economically justified in order to maintain or improve international competitiveness. In previous cases, competitiveness has been related to firms' capacity to compete on foreign markets in the long-term. However, efforts to improve a company's position on the international markets by engaging in first-mover competition may also be relevant. Usually, this can only be achieved by cutting costs. In *Lenzing/Tencel*, it was ruled there was no necessity for a merger to improve competitiveness because the merger parties would have been in a position to exceed their *break-even points*, that is to say to cover their operating costs with their operating revenues, even if the merger did not go ahead. In this connection, it was emphasised by the Austrian Supreme Court of Justice that the assessment of competitiveness was to be focussed on the company as a whole (i.e. the corporate group).[24] Assessments of mergers' economic justification have usually been left open because it has already been ruled these mergers are not necessary in order to maintain or enhance international competition.[25]

(29)   The Austrian Cartel Court and the Austrian Supreme Court of Justice most recently dealt with international competitiveness in 2005 in *Lenzing/Tencel*. This justification has not been accorded any practical significance since the 2005 Federal Cartel Act entered into force. In contrast to international competitiveness, the *Kali+Salz* criteria and the European Commission's *BASF* criteria do not require participation in international markets, evidence of cost cutting, evidence the whole company would be affected or any economic justification.

(30)   The failing firm defence (as outlined by the *BASF* criteria) therefore represents the most reliable means of assessing takeovers of financially ailing companies.

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[24] Austrian Cartel Court (KG), 28 October 2004, 27 Kt 260, 338/04-49, *Lenzing/Tencel*; Austrian Supreme Court of Justice, 14 February 2005, 16 Ok 1/05 *Lenzing/Tencel*.

[25] Cf. Austrian Supreme Court of Justice, 14 February 2005, 16 Ok 1/05, *Lenzing/Tencel*; Austrian Cartel Court, 24 May 2005, 29 Kt 5 70/04, *Agrana/Atys*; Austrian Supreme Court of Justice, 17 December 2001, 16 Ok 9/01, *Wolters Kluwer/Linde*. The criterion of economic justification was defined more precisely in § 23 para. 3 1988 Federal Cartel Act to the effect that particular attention was to be paid to the interests of end consumers.

4 Checklist for the assessment of shutdown mergers

(31) Table 1 sets out a **checklist** for the **assessment of shutdown mergers**. The individual criteria are described in greater detail in sections 4.1 and 4.2.

(32) As shown in sections 2 and 3, an objective yardstick is to be applied in **merger control** from both the legal and macroeconomic points of view. From a macroeconomic perspective, it is also to be considered whether **state aid** represents a more suitable instrument with which to rescue financially ailing companies because their liquidity is improved more rapidly and, if it is delivered in a suitable fashion, the structure of the market does not suffer any permanent impairment.

Table 1. Checklist for shutdown mergers

Assessment of shutdown mergers in merger control	
Market dominance test	• It must be reviewed objectively whether a dominant position will be created or strengthened • The significance of merger effects has to be assessed in the individual case
Urgency	• Are there objective grounds that make it necessary for the merger to be examined particularly rapidly? • Since when has the mergers and acquisitions process been ongoing?
Criteria for acceptance of failing firm defence	• Imminence of failure • No less anticompetitive alternative • No causal link between the merger and a deterioration in the competitive situation
Remedies in merger control	• Prevention of market dominance • Do not infringe fundamental freedoms
State aid as a possible alternative to a merger?	
Macroeconomic relevance	• Macroeconomic significance of the company • Magnitude of frictions and adjustment costs • Avoidance of unequal treatment
Distortions of competition should be avoided	• Rescue already necessary before COVID-19? • Danger of overcapacities • Possibility of other market participants being forced out of the market
Cost/benefit analysis	• Costs of subsidies per job
Remedies in state aid cases	• Greater legal scope • Danger of distortions of competition

The individual criteria are described in greater detail in sections 4.1 and 4.2.

4.1 Shutdown mergers in merger control

4.1.1 Market dominance test and appreciability of anticompetitive effects

(33) The substantive test for Austrian merger control is the "creation or strengthening of a dominant position" (**"market dominance test"**). The approval of a merger in Phase 1 is only permissible if it is possible to *objectively* assess that the merger will not lead to the creation or strengthening of a dominant position, or if the creation of a dominant position can be prevented by commitments to respect restrictions and obligations (Paragraph 17(2) Federal Cartel Act).[26]

Consideration of the appreciability of a merger

(34) The market dominance test of Paragraph 12 Federal Cartel Act does not require "any particular **intensity of deterioration** in the market structure".[27] As a matter of principle, mergers are therefore to be halted even if the market power of the companies involved has minimal impacts. In contrast to this, European merger control presumes that mergers are only to be halted if they would "*significantly* impede effective competition, in the common market or in a substantial part of it" (**"SIEC test"**).[28] Since 2004 the market dominance test has been replaced by the SIEC Test in most EU Member States. This change has not been made in Austria to date.

(35) Furthermore, Austrian merger control applies **lower turnover thresholds** than most EU Member States. In particular, there is **no second, domestic turnover threshold** that would prevent mergers without domestic effect from being notifiable in Austria. The retention of the market dominance test and the low turnover thresholds reflect the legislature's assessment that even relatively small mergers could impede the Austrian market.

(36) It is, however, possible for the Federal Competition Authority and the second official party, the Federal Cartel Prosecutor, to **prioritise** cases. In this respect, the Federal Competition Authority has the statutory aims of safeguarding functioning competition, and eliminating distortions or restrictions of competition in individual cases (Paragraph 1 Austrian Federal Competition Act (WettbG)).

(37) Cases should be prioritised according to the motto **"Small on small, big on big"** and pursuant to objective criteria such as the degree of market dominance, the turnover of the companies concerned, the size of the relevant markets, and the significance of those markets for upstream and downstream markets. Aspects such as the particular extent to which local markets are affected and consumers'

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[26] Cf., for instance, Kodek (2011).

[27] Urlesberger, "§ 12 KartG", para. 24, in Petsche, Urlesberger and Vartian, *KartG*, emphasis changed.

[28] Cf. Article 3(2) EC Merger Regulation (Regulation (EC) No 139/2004), emphasis added. SIEC stands for "significant impediment of effective competition".

alternative options have to be considered as well. In the end, it is consequently necessary to take an **individual decision in each case**.

As of what point does a merger count as "big"?

(38) There is a very broad spread of company sizes in Austria. 96% of companies have domestic turnover of less than €5m and – where they have no foreign turnover – therefore do not fall within the scope of Austrian merger control. Fewer than 3% of companies have turnover of €5m–€20m, and only just over 1% of companies have turnover of more than €20m.[29]

(39) An internal investigation of merger notifications in 2016 and 2017 carried out by the BWB found that the domestic turnover of the target companies (or the second-largest companies involved in the mergers) broke down as follows: €0–€0.5m in 37% of cases, €0.5m–€2m in 18% of cases, €2m–€5m in 10% of cases and €5m or more in 35% of cases. A target company with more than €5m turnover is therefore to be regarded as comparatively "big".

(40) When it comes to very small companies, a takeover frequently generates efficiency gains that may even be to the advantage of consumers. Mergers between very small companies, in particular, would therefore be welcome. If the parties' turnover on the market in question is worth just a few hundred thousand euros, the effect of such a merger on consumers and the whole economy will usually be less than if several million euros are at stake.

(41) Takeovers of larger companies with high levels of turnover on the affected markets could, by contrast, cause irreversible damage to the structure of the market in Austria. Especially on markets that are defined nationally or locally, that are dominated by two or three major companies, and on which there are barriers to market entry, mergers may result in sizeable, permanent price rises.

(42) By contrast, the takeover of financially ailing companies causes less serious problems on markets that *continue to be defined nationally*, and on which there continue to be significant competitors within the EU.[30]

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[29] Cf. Statistics Austria, Structural Business Statistics Survey (LSE), 2017; as far as these figures are concerned, it is to be taken into consideration that companies are not assigned to the larger corporate groups to which they belong in this survey.

[30] The COVID-19 crisis could bring about a regionalisation of global value chains. Upholding competition within the European Economic Area (EEA) is therefore of great importance.

4.1.2 The urgency of the merger has to be assessed objectively

(43) From the point of view of the companies involved, the circumstances of a shutdown merger may make it necessary to very rapidly obtain the **lifting of the standstill obligation** pursuant to Paragraph 17 Federal Cartel Act.

(44) The Federal Competition Authority has a very tight time limit of four weeks for the examination of mergers in Phase 1, with the option of an extension to six weeks. Pursuant to Paragraph 11(4) Federal Cartel Act, it is permissible in particular cases to refrain from submitting a request for examination within the examination period ("**waiver of examination**"). The legislature has granted undertakings whose legal or economic interests are affected by the merger a **time limit of 14 days within which to submit a statement on the matter** (Paragraph 10(4) Federal Cartel Act). As a matter of principle, it is not possible to clear mergers prior to the expiry of this deadline for undertakings to submit statements. It is to be noted that the standstill obligation may only be lifted early if the Federal Cartel Prosecutor, who is an official party in such cases, also declares a waiver of examination. The consent of both official parties is therefore to be obtained.

(45) The grounds for the urgency of implementing a shutdown merger are to be assessed objectively. In this connection, it is relevant, firstly, whether the target company is in **acute financial distress**. Secondly, it is relevant whether the **mergers and acquisitions process** was already being prepared prior to the COVID-19 crisis, or whether consideration was first given to the implementation of the merger after the shutdown had begun. In this connection, it is also to be corroborated when the initial discussions concerning the planned merger were conducted, and when decisions concerning the merger were taken in the companies involved.

4.1.3 An objective examination of the criteria for the failing firm defence is necessary

(46) If a merger would lead to the creation or strengthening of a dominant position and
   * the company does not need to be rescued or
   * there is a less anticompetitive alternative or
   * the merger would bring about a causally linked deterioration in the competitive situation,

the merger would increase markups on the markets in question and therefore ultimately decrease GDP, labour demand and the wage share. A relaxation of the criteria for rescue mergers is therefore not called-for from a macroeconomic point of view.

(47) The satisfaction of the criteria for the failing firm defence is to be reviewed in accordance with objective criteria on a case by case basis. The following information may be particularly helpful for the assessment of a failing firm defence:

Imminence of failure

(48) If it were not for the merger, the acquired company would leave the market because it is in need of rescue and is not capable of surviving on its own. Adequate documentation is required in order to prove imminence of failure: a mere claim to that effect by the parties is not sufficient.[31]

    (i) The rescue is usually likely to be necessary if insolvency proceedings have already been initiated or are imminent, and this can be verified (i.e. the company is insolvent or overindebted; cf. Paragraph 1 in conjunction with Paragraphs 66–67 Austrian Insolvency Code (IO)). In this connection, it is also relevant whether restructuring or refinancing appears feasible (cf., on this point in particular, the criteria set out in Paragraph 1 in conjunction with Paragraphs 22–23 Austrian Business Restructuring Act (URG) and Paragraph 2 Austrian Act on Substitute Equity (EKEG)).[32]

    (ii) It is also to be assumed a rescue is necessary if the company consistently had negative operating cash flows in the past. Alternatively, it is also possible to draw upon accounting data, although such data are not as easily verifiable as cash flows. [33]

    (iii) Credit ratings set by rating agencies or suppliers and the comparison of various *key performance indicators* ("KPIs" such as liquidity, debt-to-equity ratio, equity ratio, EBIT and ROI) to the industry average may also be of relevance for the assessment of whether a rescue is necessary.[34]

(49) In connection with the COVID-19 crisis, it is also of relevance whether negative cash flows had already been reported prior to the crisis or not. Furthermore, it should be disclosed whether state aid made available to help businesses cope with the COVID-19 crisis (e.g. grants, loans, guarantees, state aid for short-time working, and the deferral of taxes and social insurance contributions) have been applied for, and whether this state aid has been approved and disbursed.

No less anticompetitive alternative

(50) *"There is no less anti-competitive alternative to the merger project. In particular, there is no alternative purchaser that would not raise comparable competition issues. This requires proof that the seller has made sufficient good faith efforts to find an alternative buyer. In this context, it can also be relevant why negotiations have failed."* [35]

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[31] Cf. German Federal Cartel Office, Guidance on Substantive Merger Control, para. 184.

[32] Cf. Guidance on Substantive Merger Control, para. 184.

[33] Cf. Körber (2014).

[34] Cf. Guidance on Substantive Merger Control, para. 184.

[35] Cf. Guidance on Substantive Merger Control, para. 184.

(i) A potential buyer will not be ruled out merely because they have offered the seller a lower purchase price.[36] However, offers below the company's liquidation value may be ruled out.[37]

(ii) A potential buyer will not represent a viable alternative, in particular, if they do not have a sustainable, long-term concept for the continued operation and financing of the acquired company.[38]

No deterioration in the competitive situation

(51) Apart from the absorption criterion posited in the *Kali+Salz* decision, the assets criterion and the deterioration criterion of the *BASF* decision should also be applied in the spirit of the Horizontal Guidelines and the Guidance on Substantive Merger Control, and in favour of the merger parties:

(i) Absorption criterion. If it were not for the merger, "the acquiring company would also largely gain the failing firm's market position. This can in particular be expected if the merging parties are the only significant competitors in the market and therefore customers cannot switch to an adequate alternative supplier. If several other competitors remain in the market, it is generally to be expected that the acquiring company will not gain the failing company's market shares in total. Instead, it is likely that the remaining companies will also be able to gain a significant part of the market shares. However, in some cases this may not be the case, i.e. if it is likely that absent the merger the acquiring company will largely (but not entirely) gain the failing firm's market position and in particular if also shrinkage effects in favour of the competitors are likely after the merger."[39]

(ii) Assets criterion. An insolvency may "be more beneficial than a merger with regard to the impact on competition, if the other suppliers would compete for the market shares and assets of the insolvent company. Insolvency is not a preferable alternative, however, if it is likely to result in the exit of the target company's assets – and consequently of its competitive potential – from the market."[40]

(iii) Deterioration criterion. It is possible for a rescue merger to be cleared if it "will usually not lead to market conditions that are less favourable from a competition perspective than those that would result from the failing firm's exit from the market."[41]

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[36] Cf. Guidance on Substantive Merger Control, para. 184.

[37] Cf. US Department of Justice (DoJ) and Federal Trade Commission (FTC), Horizontal Merger Guidelines, 2010, Section 11.

[38] Cf. Guidance on Substantive Merger Control, para. 184.

[39] Cf. Guidance on Substantive Merger Control, para. 184, emphasis changed.

[40] Cf. Guidance on Substantive Merger Control, para. 184, emphasis changed.

[41] Cf. Guidance on Substantive Merger Control, para. 184, emphasis changed.

<u>Higher standards for the *failing division defence*: no "cooking the books" to minimise divisions' profits</u>

(52)   The assessment is to be based exclusively on operating costs. The proportional inclusion of overheads in the calculations does not appear appropriate because these costs would be incurred by the company in any case. As far as the operating costs are concerned, attention would have to be paid, in particular, to ensure that the division's costs are not inflated by excessive internal transfer prices or licensing fees.

<u>Higher standards for the *failing division defence*: no strategic grounds for continued operation</u>

(53)   As argued convincingly by Körber (2014), it is to be established credibly that there are no strategic grounds for the continued operation of the unprofitable division. The evidence that this is the case should be relatively easy to supply by presenting internal documents, such as a decision taken by the executive management to wind down the division's operations.

4.1.4 Remedies imposed in merger control must correspond to legal requirements

(54)   Obligations and restrictions (Paragraph 12(3) 3 Federal Cartel Act) serve to prevent the creation or strengthening of a dominant position, or to achieve one of the justificatory objectives provided for in Paragraph 12(2) Federal Cartel Act.[42]

(55)   In the past, obligations were sometimes also imposed that were aimed at keeping Austrian sites in operation.[43] In this respect, it is to be ensured that the principles

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[42] Explanatory Remarks to the Government Bill Introducing the Federal Cartel Act (ErläutRV KartG), November 1993, 20.

[43] The *Lenzing/Tencel* merger was ultimately approved subject to remedies. Apart from an obligation intended to open the market, under which licences for the Lyocell production technology were to be made available to potential interested parties on fair conditions, the merger parties were ordered to continue to operate the production site at Heiligenkreuz in Burgenland and conduct research on Lyocell fibre technology at the Lenzing site for six years (Austrian Cartel Court, 5 April 2005, 29 Kt 133/05-12, *Lenzing/Tencel II*). However, it is to be noted that at the time when the obligations were being discussed the continued operation of the production site at Heiligenkreuz and the research site at Lenzing had already been decided on in any case. Moreover, funding had been granted for the continuation of Lyocell research by the Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT) with a subsidy of about €5.7m, which had been applied for on 1 April 2005 (cf. Geyer and Tiefenthaler, "Programmevaluierung 'Headquarter Strategie', Endbericht an das BMVIT", 2011, 45).

of freedom of establishment and free movement of capital are respected when cross-border mergers are examined.[44]

(56) The companies involved may also make commitments to the official parties to respect restrictions and obligations, "in order to achieve that a request for examination be waived or withdrawn" (second sentence of Paragraph 17(2) Federal Cartel Act). Paragraph 11 Federal Cartel Act and the second sentence of Paragraph 17 2 Federal Cartel Act do not set out any requirements concerning the substantive content of these commitments to respect restrictions and obligations. Such requirements derive from the functions of the official parties, safeguarding the public interest in the protection of functioning competition in particular.[45]

4.2 State aid as a possible alternative?

(57) In connection with the financial crisis, it has been argued that **state aid is better suited** than mergers to ensure the survival of financially distressed companies. While state aid delivers immediate help, it can take some time before profits are earned again following a merger. Past mergers have shown that merging two financially ailing institutions does not create a financially secure, efficient company.[46]

(58) Against the background of the COVID-19 crisis, a **temporary framework** for the assessment of state aid has also been put in place that is intended to make it easier to assist affected companies expeditiously.[47]

4.2.1 Macroeconomic relevance

(59) Especially when there is a big, temporary, exogenous shock such as the COVID-19 pandemic, it may be economically worthwhile to use state aid under the EU's state aid regime to ensure **a sufficient number of independent competitors is retained**.

(60) It seems particularly important to ensure the survival of companies that are active on *nationally or locally defined markets*, that hold a large share of consumers' consumption expenditure, or are important suppliers or customers for other Austrian companies. In this respect, it is also to be ascertained whether there are

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[44] According to the established case law of the European Court of Justice, national measures that constrain fundamental freedoms for purely economic reasons are impermissible, and it must be possible for them to be contested before the national courts; cf. European Commission, Protection of intra-EU investment, COM/2018/547, and Jones and Davis (2014).

[45] Cf. Kodek (2011).

[46] OECD, Policy Roundtable, Competition and Financial Markets, Submission by the European Commission, DAF/COMP(2009)11, 2009, 237.

[47] Temporary Framework for State aid measures to support the economy in the current COVID-19 outbreak, *OJ C* 1863, 19 March 2020, and amendments C(2020) 2215, 3 April 2020, and C(2020) 3156, 8 May 2020.

frictions or adjustment costs that prevent companies from being able to adjust to the new circumstances on the market by their own efforts.[48]

(61) Empirical investigations suggest that politically networked companies enjoy preferential treatment when state aid is granted.[49] The unequal treatment of companies runs counter to the **prohibition of discrimination** anchored in the Austrian constitution and European law, and should be avoided.

4.2.2 Distortions of competition should be avoided

(62) Where companies **regularly reported negative operating cash flows** prior to the COVID-19 crisis, there would appear to be a structural weakness, and leaving the market by means of a merger ("exit by merger") may be more expedient than a bailout with state aid. In this case, however, it should also be possible for the merged company to implement internal restructuring measures and optimise its cost structure.

(63) As a result of the COVID-19 crisis, there could be permanent falls in demand in some sectors. In this case, the maintenance of existing structures could result in oversupply that is not matched by demand. The consequences could be price wars and a structural crisis that drags on for many years. Where there is a danger of **overcapacities**, exit by merger might by preferable. The merged companies should be free to reduce capacities, optimise costs and adapt their corporate structures to the new market conditions.

(64) At the same time, it is to be borne in mind that the systematic promotion of inefficient companies leads to **more efficient companies being crowded out of the market**, consequently reducing the productivity level and, ultimately, gross domestic product. As long as there is no immediate danger of insolvency, it therefore appears more pragmatic to promote the economy and, in particular, the retention of jobs as broadly as possible instead of subsidising individual companies.

4.2.3 Consideration of costs

(65) The costs of state aid (grants, loans, guarantees, etc.) eventually have to be met by the **taxpayer**. The currently very low interest rates on Austrian government bonds limit the scale of these costs. The distribution of the tax burden may also be influenced subsequently in a targeted fashion through policy channels (for instance by making the tax system more progressive). By contrast, the costs of market power are passed on to individual **groups of consumers** in the form of higher prices. It is not possible for this burden to be redistributed. In the end, what matters is to capture the societal costs of various policy options in an objective, transparent way.

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[48] As explained in section 2, companies are frequently in a position to adapt with great speed.

[49] Cf. Faccio et al (2006), Duchin and Sosyura (2012), Amore and Bennedsen (2013), and Behn et al (2015) on state aid, and Dinc and Erel (2013) on political influence over merger control.

(66) In order to deploy public funds as effectively as possible, it may be worthwhile to ascertain the **costs of state aid per job** and/or the **costs relative to the value added per job** in subsidised companies. The assessment of these costs has to be conducted in accordance with up-to-date academic findings and methods and, apart from the direct impacts on the company in question, should also take account of the indirect impacts on suppliers, customers and competitors that do not receive any state aid.

4.2.4 Remedies relating to state aid should not cause distortions of competition

(67) Commitments made by companies to respect restrictions and obligations in exchange for the granting of state aid do not constitute infringements of fundamental freedoms, and therefore offer **greater scope for action**, for instance when it comes to commitments to keep sites open and retain jobs.

(68) In this connection, however, it is to be emphasised once again that the systematic promotion of inefficient companies causes **distortions of competition**, which ultimately impair economic growth.

Literature

Altig, D., Christiano, L. J., Eichenbaum, M., and Linde, J. (2011), "Firm-specific capital, nominal rigidities and the business cycle", *Review of Economic Dynamics*, 14(2), 225–247.

Amore, M. D., and Bennedsen, M. (2013), "The value of local political connections in a low-corruption environment", *Journal of Financial Economics*, 110(2), 387–402.

Atkeson, A., and Burstein, A. (2008), "Pricing-to-market, trade costs, and international relative prices", *American Economic Review*, 98(5), 1998–2031.

Autor, D. H., Dorn, D., and Hanson, G. H. (2013), "The China syndrome: Local labor market effects of import competition in the United States", *American Economic Review*, 103(6), 2121–2168.

Autor, D., Dorn, D., Katz, L. F., Patterson, C., and Van Reenen, J. (2020), "The fall of the labor share and the rise of superstar firms", *Quarterly Journal of Economics*, 135(2), 645–709.

Baqaee, D. R. (2018), "Cascading failures in production networks", *Econometrica*, 86(5), 1819–1838.

Baqaee, D. R., and Farhi, E. (2020), "Productivity and misallocation in general equilibrium", *Quarterly Journal of Economics*, 135(1), 105–163.

Barkai, S. (2019), "Declining labor and capital shares", *Journal of Finance*, forthcoming.

Behn, M., Haselmann, R., Kick, T., and Vig, V. (2015), *The Political Economy of Bank Bailouts*, IMFS Working Paper Series, no. 86.

Carvalho, V. M., Nirei, M., Saito, Y., and Tahbaz-Salehi, A. (2016), *Supply Chain Disruptions: Evidence from the Great East Japan Earthquake*, Columbia Business School Research Paper, no. 17-5.

Chor, D. (2010), "Unpacking sources of comparative advantage: A quantitative approach", *Journal of International Economics*, 82(2), 152–167.

Cunat, A., and Melitz, M. J. (2012), "Volatility, labor market flexibility, and the pattern of comparative advantage", *Journal of the European Economic Association*, 10(2), 225–254.

Dauth, W., Findeisen, S., and Suedekum, J. (2014), "The rise of the East and the Far East: German labor markets and trade integration", *Journal of the European Economic Association*, 12(6), 1643–1675.

De Loecker, J., Eeckhout, J., and Unger, G. (2020), "The rise of market power and the macroeconomic implications", *Quarterly Journal of Economics*, 135(2), 561–644.

Dinc, S., and Erel, I. (2013), "Economic nationalism in mergers and acquisitions", *Journal of Finance*, 68(6), 2471–2514.

Duchin, R., and Sosyura, D. (2012), "The politics of government investment", *Journal of Financial Economics*, 106(1), 24–48.

Faccio, M., Masulis, R. W., and McConnell, J. J. (2006), "Political connections and corporate bailouts", *Journal of Finance*, 61(6), 2597–2635.

Federico, G., Langus, G., and Valletti, T. (2018), reprint of "Horizontal mergers and product innovation", *International Journal of Industrial Organization*, 61, 590–612.

Fumagalli, C., Motta, M., and Calcagno, C. (2018), *Exclusionary Practices: The Economics of Monopolisation and Abuse of Dominance*, Cambridge University Press.

Grassi, B. (2017), "IO in IO: Competition and volatility in input-output networks", unpublished manuscript, Bocconi University.

Grassi, B., and Sauvagnat, J. (2019), "Production networks and economic policy", *Oxford Review of Economic Policy*, 35(4), 638–677.

Groth, C., and Khan, H. (2010), "Investment adjustment costs: An empirical assessment", *Journal of Money, Credit and Banking*, 42(8), 1469–1494.

Gugler, K., and Yurtoglu, B. B. (2004), "The effects of mergers on company employment in the USA and Europe", *International Journal of Industrial Organization*, 22(4), 481–502.

Gutiérrez, G., and Philippon, T. (2017), *Declining Competition and Investment in the US*, CEPR Discussion Paper, no. DP12536.

Hall, R. E. (2004), "Measuring factor adjustment costs", *Quarterly Journal of Economics*, 119(3), 899–927.

Jones, A., and Davies, J. (2014), "Merger control and the public interest: balancing EU and national law in the protectionist debate", *European Competition Journal*, 10(3), 453–497.

Kodek, G. E. (2011), "Vergleichsabschluss durch die Amtsparteien im Kartellverfahren – eine Replik", in Matousek, Müller and Thanner, *Jahrbuch Kartellrecht und Wettbewerbsrecht 2011*, 27.

Körber, T. (2014), "Die Sanierungsfusion im Kartellrecht", *Zeitschrift für Wettbewerbsrecht*, 12(1), 32–59.

Motta, M., and Tarantino, E. (2017), *The Effect of Horizontal Mergers, When Firms Compete in Prices and Investments*, Working Paper Series, 17.

Nunn, N., and Trefler, D. (2014), "Domestic institutions as a source of comparative advantage", in *Handbook of International Economics*, vol. 4, Elsevier, 263–315.

Annex ./A

A general equilibrium model featuring oligopolistic competition

A simple general equilibrium model consists of an **oligopolistic product market** and a **labour market**.[50] A continuum of households decide on their consumption and supply of labour. On the product market, a limited number of companies find themselves in competition, setting their prices or production volumes strategically. The **household** solves the (static) maximisation problem

$$\max_{y,L} \frac{y^{1-\xi}}{1-\xi} - \frac{L^{\chi}}{\chi} \text{ subject to } Py \le wL + \pi$$

where y is the consumption of a bundle of goods, L is the labour supply, P is a price index, w is the wage level and π is the sum of the profits of all the companies on the product market. Parameter $\xi \ge 0$ is the coefficient of relative risk aversion, $\chi = 1 + 1/f$ and $f > 0$ is the Frisch labour supply elasticity.[51]

The gross domestic product (GDP = Py) of this model is equal to the sum of wage income and company profits. The budget constraint $Py \le wL + \pi$ makes it clear that households are not able to consume more than they produce. The bundle of goods y and the price index P are given by the CES functions

$$y = \left(N^{-\phi} \sum_{i=1}^{N} y_i^{(\epsilon-1)/\epsilon} \right)^{\epsilon/(\epsilon-1)},$$

$$P = \left(N^{-\epsilon\phi} \sum_{i=1}^{N} p_i^{1-\epsilon} \right)^{\frac{1}{1-\epsilon}}$$

where N is the number of goods, ϕ is a parameter that indicates the preference for product variety, and ϵ represents the elasticity of substitution between products. The

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[50] This model is based on Atkeson and Burstein (2008), and Grassi (2017).

[51] The macroeconomic Frisch labour supply elasticity measures the percentage change in the labour supply when there is a percentage change in wages, taking account of the "intensive margin" (elasticity of working hours per employee) and the "extensive margin" (elasticity of the participation rate).

price and volume of the product i are p_i and y_i. At the optimum, the household's consumption level and labour supply satisfy the following equations:

$$\frac{w}{P} = \frac{L^{\chi-1}}{y^{-\xi}}$$

$$Py = wL + \pi$$

$$y_i = N^{-\epsilon\phi}\left(\frac{p_i}{P}\right)^{-\epsilon} y$$

On the product market, there are N **companies** that produce N different product varieties using the input factor labour (L). The production function of company i is $y_i = z_i L_i$, while its productivity $z_i > 0$ determines how many units of labour are required to produce one unit of the good y_i. This yields the cost function $C_i = (w/z_i)y_i$. The inverse demand function of company i is

$$p_i = N^{\phi}\left(\frac{y_i}{y}\right)^{-1/\epsilon} P$$

Each company i solves the profit maximisation problem

$$\max_{y_i} \pi_i = \left(N^{-\phi}\left(\frac{y_i}{y}\right)^{-1/\epsilon} P\right) y_i - \frac{w}{z_i} y_i$$

In optimal conditions, each company has a price p_i, a market share s_i and an own-price elasticity of

$$p_i = \frac{\eta_i}{\eta_i - 1}\frac{w}{z_i} = \mu_i \frac{w}{z_i},$$

$$s_i = N^{-\epsilon\phi}\left(\frac{p_i}{P}\right)^{1-\epsilon} = \frac{y_i}{y},$$

$$\eta_i = \left(\frac{1}{\epsilon} + \left(1 - \frac{1}{\epsilon}\right)s_i\right)^{-1}$$

where $\mu_i = (p_i/c_i) \geq 1$ is its markup.

In **general equilibrium**, all markets are cleared simultaneously. One of the prices can be normalized. It is convenient to set the price of the bundle of goods equal to 1 ($P = 1$), so that all prices are expressed relative to the consumer price index.

The sectoral markup μ of all companies is defined as the price index P divided by the sectoral marginal costs $c = dC/dy$. The total costs of all companies are given by

$$C = \sum\nolimits_{i=1}^{N} c_i\, y_i = \left(\sum\nolimits_{i=1}^{N} c_i\, N^{-\epsilon\phi} \left(\frac{p_i}{P}\right)^{-\epsilon}\right) y$$

By definition, the sectoral marginal costs are given by

$$c = \frac{dC}{dy} = \left(\sum\nolimits_{i=1}^{N} c_i\, N^{-\epsilon\phi} \left(\frac{p_i}{P}\right)^{-\epsilon}\right)$$

Since $c_i = p_i/\mu_i$ and $s_i = N^{-\phi\epsilon}(p_i/P)^{1-\epsilon}$, the sectoral markup is given by

$$\mu = \frac{P}{c} = \left(\sum\nolimits_{i=1}^{N} c_i\, N^{-\epsilon\phi} \frac{p_i^{-\epsilon}}{P^{1-\epsilon}}\right)^{-1} = \left(\sum\nolimits_{i=1}^{N} \frac{p_i}{\mu_i} N^{-\epsilon\phi} \frac{p_i^{-\epsilon}}{P^{1-\epsilon}}\right)^{-1} = \left(\sum\nolimits_{i=1}^{N} \frac{s_i}{\mu_i}\right)^{-1}$$

and is therefore equal to the market share-weighted harmonic mean of the individual markups.

The production function has constant economies of scale, which is why the sectoral marginal costs are equal to the average costs C/y. Inserting $c_i = w/z_i$ and $s_i = y_i/y$ yields

$$c = \frac{\sum_{i=1}^{N} c_i y_i}{y} = \sum\nolimits_{i=1}^{N} \frac{w}{z_i} \frac{y_i}{y} = w \left(\sum\nolimits_{i=1}^{N} \frac{s_i}{z_i}\right) = \frac{w}{z}$$

where the sectoral productivity $z = (\sum_{i=1}^{N}(s_i/z_i))^{-1}$ is equal to the market share-weighted harmonic mean of the individual productivities.

Since $\mu = Pz/w$ and $P = 1$, the wage level is therefore given by

$$w = \frac{z}{\mu}$$

Furthermore, since $P = 1$, it holds that

$$\frac{w}{P} = \frac{L^{\chi-1}}{y^{-\xi}}$$

$$L = \left(wy^{-\xi}\right)^{\frac{1}{\chi-1}} = \left(\frac{z}{\mu}y^{-\xi}\right)^{\frac{1}{\chi-1}}$$

The total profit of all companies is given by

$$\pi = \sum_{i=1}^{N}(p_i - c_i)y_i = \sum_{i=1}^{N}\left(p_i - \frac{p_i}{\mu_i}\right)y_i =$$

$$\pi = (P - P/\mu)y = (1 - \mu^{-1})Py = (1 - \mu^{-1})y$$

Inserting this into the budget equation yields

$$Py = wL + \pi$$

$$y = w\left(wy^{-\xi}\right)^{1/(\chi-1)} + (1 - \mu^{-1})y$$

$$y = \left(w^{\chi/(\chi-1)}y^{-\xi/(\chi-1)}\right) + y - y/\mu$$

$$0 = \left(w^{\chi/(\chi-1)}y^{-\xi/(\chi-1)}\right) - y/\mu$$

$$y/\mu = w^{\chi/(\chi-1)}y^{-\xi/(\chi-1)}$$

$$y^{1+\xi/(\chi-1)} = y^{(\chi-1+\xi)/(\chi-1)} = w^{\chi/(\chi-1)}\mu$$

$$y = w^{\chi/(\chi+\xi-1)}\mu^{(\chi-1)/(\chi+\xi-1)}$$

$$y = (z\mu^{-1})^{\chi/(\chi+\xi-1)}\mu^{(\chi-1)/(\chi+\xi-1)}$$

$$y = z^{\chi/(\chi+\xi-1)}\mu^{(\chi-1)/(\chi+\xi-1)}\mu^{-\chi/(\chi+\xi-1)}$$

$$y = z^{\chi/(\chi+\xi-1)}\mu^{-1/(\chi+\xi-1)}$$

Re-inserting into the labour demand yields

$$L = \left(\frac{z}{\mu}y^{-\xi}\right)^{\frac{1}{\chi-1}} = \left(z\mu^{-1}\left(z^{\chi/(\chi+\xi-1)}\mu^{-1/(\chi+\xi-1)}\right)^{-\xi}\right)^{\frac{1}{\chi-1}}$$

$$= \left(z^{1-\xi\chi/(\chi+\xi-1)}\mu^{\xi/(\chi+\xi-1)-1}\right)^{\frac{1}{\chi-1}} =$$

$$L = \left(z^{1-\xi\chi/(\chi+\xi-1)}\mu^{(\xi-\chi-\xi+1)/(\chi+\xi-1)}\right)^{\frac{1}{\chi-1}} = \left(z^{1-\xi\chi/(\chi+\xi-1)}\mu^{(1-\chi)/(\chi+\xi-1)}\right)^{\frac{1}{\chi-1}}$$

$$L = z^{1/(\chi-1)-\xi\chi/((\chi+\xi-1)(\chi-1))}\mu^{-1/(\chi+\xi-1)}$$

$$L = z^{\chi/(\chi+\xi-1)-1}\mu^{-1/(\chi+\xi-1)}$$

The wage share $LQ = wL/Py$ is given by

$$LQ = (z\mu^{-1})\left(z^{\chi/(\chi+\xi-1)-1}\mu^{-1/(\chi+\xi-1)}\right)\left(z^{\chi/(\chi+\xi-1)}\mu^{-1/(\chi+\xi-1)}\right)^{-1} =$$
$$LQ = \left(z^{1+\chi/(\chi+\xi-1)-1-\chi/(\chi+\xi-1)}\right)\mu^{-1} = \mu^{-1}$$

Grassi (2017) calibrates the relative risk aversion to $\xi = 1$ and the Frisch labour supply elasticity to $f = 1.5$ so that $\chi = 1 + 1/f = 1.67$. In equilibrium, **GDP** (Py), **labour demand** (L), **wages** (w) and the **wage share** $(LQ = wL/Py)$ are given by

$$BIP = Py = z^{\chi/(\chi+\xi-1)}\mu^{-1/(\chi+\xi-1)} = z\mu^{-0.6}$$

$$L = z^{\chi/(\chi+\xi-1)-1}\mu^{-1/(\chi+\xi-1)} = \mu^{-0.6}$$

$$w = z\mu^{-1}$$

$$LQ = \frac{wL}{Py} = \mu^{-1}$$

The **elasticities** of these four characteristics are *constant* and *strictly negative with regard to the markup* $\eta_x = (\partial x/\partial\mu)(\mu/x)$:[52]

$$\eta_{BIP} = -1/(\chi + \xi - 1) = -0.6$$

$$\eta_L = -1/(\chi + \xi - 1) = -0.6$$

$$\eta_w = -1$$

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[52] Households are risk neutral or risk averse, so $\xi \geq 0$. Furthermore, $\chi = 1 + 1/f$ with $f > 0$ implies that $\chi \geq 1$, $\lim_{f\to\infty}\chi = 1$, $\lim_{f\to 0} -1/(\chi + \xi - 1) = 0$ and $\lim_{\xi\to 0} -1/(\chi + \xi - 1) = -f$. Therefore $\eta_{BIP} = \eta_L = -1/(\chi + \xi - 1) < 0$ for a positive Frisch elasticity of $f > 0$.

$$\eta_{LQ} = -1$$

With the chosen calibration, a 1% increase in the sectoral markup therefore decreases GDP and labour demand by 0.6%, and reduces wages and the wage share by 1%.[53]

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[53] According to Peterman (2016), general equilibrium models are often calibrated with a macroeconomic Frisch elasticity of 2–4 (cf. Peterman, W. B. (2016), "Reconciling micro and macro estimates of the Frisch labor supply elasticity", *Economic Inquiry*, 54(1), 100–120). Calibration to $\xi = 1$ and $\chi = 4$ yields $\eta_{BIP} = -0.8$; calibration to $\xi = 0$ and $\chi = 4$ yields $\eta_{BIP} = -4$.