Trade wars and the
Swiss economy

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Statement

The goal of *Aussenwirtschaft* is to publish high quality analyses of important international economic policy matters that affect Switzerland. Given the integration of many Swiss firms and markets into the European and global economy, articles published in this journal may relate to policy initiatives taken in foreign countries as well. Furthermore, reflecting the many forms of cross-border commerce in the twenty-first century, the range of policies considered is not confined to traditional international trade policies. The journal seeks to inform deliberations by decision-makers – political, corporate, employees, as well as civil society – in Switzerland and abroad.

Trade wars and the Swiss economy

This paper quantifies the impact of trade tensions between the United States and China. Using a general equilibrium Ricardian trade model, it provides a Swiss-centric analysis of two tariff escalation shocks. Counterfactual analysis shows that welfare and trade effects are broadly negative for the United States and China. In contrast, both tariff escalation shocks could lead to a small increase in real GDP in Switzerland. The labor productivity of Swiss manufacturing sectors increases slightly, especially in sectors that are well-connected to China. While trade collapses between the United States and China, Swiss real exports to the United States in selected sectors increase significantly.

We measure the extent to which Swiss market access would be affected in a global trade war. After calculating the change in tariffs at the tariff-line level that Swiss exporters would face in a trade war, we then aggregate them at the industry, destination market, and global level using theoretically well-grounded aggregation methods first introduced by Anderson and Neary (1996). Our results suggest that Swiss market access will be seriously jeopardized in the event of a global trade war, with an increase in tariffs faced by Swiss exporters of 34 percentage points. The largest increases in tariffs would be experienced in large destination markets where Swiss exporters currently benefit from low export barriers (the European Union, the United States and Japan). Chemicals, machinery, professional and scientific equipment, and food experience above average increases in tariff barriers.

Export hurdles in practice
Emilie Gachet and Tiziana Hunziker   *61*

The theme of protectionism has received plenty of media coverage since Donald Trump's election as President of the United States and the subsequent trade war with China. It is a geographically widespread phenomenon, which also encompasses Europe and Switzerland. For this study, we surveyed just under 560 exporting Swiss small and medium-sized enterprises (SMEs) to obtain their views on the issues of protectionism and export barriers. More than 40% believe these do not pose any challenge, or at most only a minor one. The resurgence of protectionism since 2016 appears to have had only a slight impact on Swiss SMEs so far. Just 23% of respondents expressed the view that the situation had deteriorated compared to five years ago, whereas half did not perceive any change. This could be attributable to the fact that just 20-30% of surveyed SMEs are experiencing trade obstacles in the most important European markets. Barriers are higher in other markets, however. Just under 50% of SMEs perceive barriers when exporting to the United States, and this figure rises to as much as 54% when it comes to the third most important region – China/Hong Kong. The principal instrument of the current trade war, namely, conventional tariffs, is problematic for just under half of respondent companies. However, customs procedures and the workload associated with the provision of conformity assessments and product origin documentation, which are all categorized as non-tariff trade obstacles, are perceived as greater challenges. When it comes to obstacles to the export business, the two most significant factors of all – ranking above both tariff-based and non-tariff barriers – are perceived by respondent companies to be the price of their offering and prevailing exchange rates.

Swiss goods exports and the Sino-US trade war: Conflicting transmission mechanisms
Simon J. Evenett   *91*

This paper identifies various channels through which the Sino-US trade war and the January 2020 truce affect Swiss goods exports. As a third party to this bilateral trade war, Switzerland's goods exports were not targeted directly. Nevertheless, Swiss goods exports were implicated and evidence is presented that scales different transmission mechanisms. Given that leading central banks eased monetary policy partly on account of the macroeconomic consequences of the Sino-US trade war, a new dimension to the trade and monetary nexus has arisen. The consequences of this for the conduct of Swiss monetary policy are discussed.

Book review

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The impact of trade tensions on Switzerland:
A quantitative assessment

Laurence Wicht[1]
Swiss National Bank

This paper quantifies the impact of trade tensions between the United States and China. Using a general equilibrium Ricardian trade model, it provides a Swiss-centric analysis of two tariff escalation shocks. Counterfactual analysis shows that welfare and trade effects are broadly negative for the United States and China. In contrast, both tariff escalation shocks could lead to a small increase in real GDP in Switzerland. The labor productivity of Swiss manufacturing sectors increases slightly, especially in sectors that are well-connected to China. While trade collapses between the United States and China, Swiss real exports to the United States in selected sectors increase significantly.

1   Introduction

After years of deepening trade integration between countries, and relative stability within the multilateral trading system, protectionism has made a noted comeback. The United States has recently introduced trade barriers against selected industries and trading partners (USTR, 2017; 2018a; 2019). In particular, it has actively implemented import tariffs against its largest trading partner, China, prompting waves of retaliation.[2] Growing trade tensions between the two countries have generated significant uncertainty. Academics, policymakers, and international organizations have underlined the potential consequences of these trade tensions. For example, the IMF has warned that tariff increases would hurt trade and, ultimately, macroeconomic outcomes (IMF, 2019). Echoing this assessment, the OECD explained that trade tensions not only hurt the short-term outlook but also the medium-term prospects of the global economy, and has called for rapid government action to reinvigorate growth (OECD, 2019).

This paper proposes a quantitative assessment of the implications of growing trade tensions between the United States and China. Using a general equilibrium

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1   Email for correspondence: laurence.wicht@snb.ch. The author thanks Claudia Bernasconi, Pınar Yeşin, and the participants at the 2019 *Aussenwirtschaft* workshop for valuable comments, as well as Jeremias Kläui and Viktória Vidaházy for excellent research assistance. The views expressed in this paper are those of the author and do not necessarily reflect those of the Swiss National Bank. All remaining errors are my own.

2   See, for example, four waves of tariff escalation between the United States and China as published by the US Trade Representative (USTR) and the Chinese Ministry of Commerce (MOFCOM) (MOFCOM, 2018a; 2018b; USTR, 2018b; 2018c).

Ricardian trade model, it provides a Swiss-centric analysis of their welfare and trade effects. To do so, the paper builds on the theoretical framework and calibration approach of WICHT (2019), which calibrates a multi-country multi-sector trade model to study Switzerland's gains from trade.

The theoretical framework follows CALIENDO and PARRO (2015), who propose an extension of EATON and KORTUM (2002) to study the effects of the North American Free Trade Agreement (NAFTA). The model allows for a rich international production and trade setup. On the production side, the model matches value added and input–output structure at the sector and country level. Production is at constant returns to scale and markets are perfectly competitive. On the trade side, the model matches sectoral trade flows between countries. Trade is shaped by Ricardian forces (technology and costs) and by gravity (trade costs). Departing from CALIENDO and PARRO (2015), the theoretical framework further allows for endogenous trade balances following CALIENDO ET AL. (2018). Bringing the model to the data, the calibration accounts for 34 countries (including Switzerland) plus a constructed rest of the world, and for 20 sectors (agriculture, manufacturing sectors, and a composite service sector).

The counterfactual analysis studies two tariff shocks. In the first shock, the model evaluates the effects of the tariff escalation between the United States and China as of May 2019. This shock encompasses several tariff waves since 2018, which affect half of the current trade value between the two countries. In the second shock, the model evaluates the effects of an eventual worsening of trade tensions, in which all bilateral tariffs between the United States and China are set to a 25% ad-valorem rate. This second shock thus encompasses an additional bilateral tariff increase, moving from the state of tariffs as of May 2019 to 25% bilateral tariff rates.

The counterfactual analysis studies the welfare and trade effects associated with moving from an initial equilibrium to a counterfactual equilibrium resulting from each tariff shock.[3] Welfare effects, which are broadly designated as gains from trade in the literature, are often the main unit of analysis in quantitative trade papers (ARKOLAKIS ET AL., 2012; COSTINOT and RODRÍGUEZ-CLARE, 2014). Country-level welfare effects are captured by the change in real GDP, while sectoral welfare effects are captured by the change in sectoral labor productivity. Trade effects are useful to illustrate the impact of the tariff shock on key economic indicators, which are often the focus of policy discussions. In particular, this paper focuses on changes in aggregate trade balances and real exports. Although the

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3   Note that welfare and trade effects associated with the second shock represent an effect additional to those of the first shock. The counterfactual equilibrium resulting from the second shock is compared to the baseline equilibrium resulting from the first.

main focus of this paper is Switzerland, welfare and trade effects for the United States and China are presented to contrast with those of Switzerland.

Considering welfare effects, the United States and China bear losses following each tariff shock of –0.13% and –0.07%, respectively, for the United States and –0.15% and –0.10%, respectively, for China. The model predicts that aggregate losses are larger for China than for the United States. Sector-level results, however, indicate that Chinese manufacturing sectors tend to have smaller declines in labor productivity compared to US manufacturing sectors. Although the US administration hopes to protect domestic production (USTR, 2018d), the model suggests that US exporting sectors are the hardest hit by the bilateral tariff escalation. Furthermore, the magnitudes of the welfare losses are relatively small. This is not an unusual outcome in this type of model, so it is useful to put the results into perspective. CALIENDO and PARRO (2015) estimate, for example, that the tariff cuts associated with NAFTA led to a +0.11% increase in US real GDP. The model predicts that the first tariff shock more than offsets US gains realized through trade integration with its neighbors. In particular, the model shows that the first shock has the largest effects. An additional tariff escalation would not have as much impact on welfare as the tariffs first implemented.

In contrast to the United States and China, the counterfactual analysis predicts small welfare gains for Switzerland, with real GDP increasing by +0.01% following each shock. Furthermore, each tariff shock leads to modest labor productivity increases in Swiss manufacturing sectors. Labor productivity gains depend, however, on a sector's exposure to the United States and to China. Sectors with a high exposure to China have larger productivity gains, while sectors with a high exposure to the United States tend to have lower productivity gains. The larger productivity losses of US manufacturing sectors thus weigh on Swiss manufacturing sectors. In contrast, Chinese goods remain comparatively competitive and benefit the Swiss sectors with good access to Chinese inputs.

Turning to trade effects, both tariff shocks have a limited impact on aggregate trade balances, but they may significantly alter bilateral trade balances and sectoral trade flows. In particular, trade between the United States and China collapses. China's contribution to the US aggregate trade deficit is halved following each tariff shock. Both countries' real exports also decline, driven by their bilateral trade collapse. While US real exports decline across all trading partners, China's real exports increase across all its non-US trading partners. Chinese exports thus remain competitive towards non-US trading partners, which supply the United States in China's stead. The model thus predicts that while US reliance on Chinese imports decreases, its reliance on other trading partners increases and the US aggregate trade deficit remains intact.

Swiss real exports shift across trading partners and sectors, although they stay stable at the aggregate level. In particular, Swiss real exports to the United States increase. In given sectors, such increases may reach up to 24%. The counterfactual analysis thus suggests that trade tensions between the United States and China affect bystander countries such as Switzerland. The significant trade reallocation between the United States, China, and their trading partners provides challenges and opportunities.

Although the model suggests that Switzerland could slightly benefit from the trade tensions between the United States and China, the results should be interpreted carefully within the scope of the theoretical framework. Model characteristics ground the counterfactual results. The model cannot account for the transition from one steady state to another, which may entail significant frictions and costs. The model also focuses on a single transmission channel of trade shocks on real activity, though other channels – such as uncertainty, business confidence, and investment – may play an important role. In particular, the model cannot account for safe haven pressures, which could result from uncertainty and could negatively impact Switzerland. These aspects could possibly lead to larger effects and offset the small gains of bystander countries such as Switzerland.

This paper is organized as follows. Section 2 situates this paper within the literature. Section 3 gives an overview of the theoretical framework and of the calibration approach. Section 4 details the construction of the two tariff shocks. Section 5 presents the results of the counterfactual analysis. Section 6 concludes.

2   Related literature

This paper builds upon the extensive quantitative literature exploring the impact of trade costs on welfare and the determinants of gains from trade. In particular, the paper first relates to the quantitative general equilibrium Ricardian trade literature (Eaton and Kortum, 2002; Dekle et al., 2008; Caliendo and Parro, 2015) and, within that literature, to the papers focusing on Switzerland (Hepenstrick, 2016; Wicht, 2019). The paper is also broadly related to the extensive literature studying the effects of trade policy. Ossa (2016) and Goldberg and Pavcnik (2016) provide surveys of this literature.

The recent tariff escalation has prompted several studies attempting to quantify its consequences for the global economy. Most contributions seek to quantify the effects of tariff increases using general equilibrium models. For example, the IMF estimates the impact of an illustrative scenario in which tariffs between the United States and China increase by 25%. Such a scenario leads to estimated

GDP losses ranging from 0.3% to 0.6% in the United States and from 0.5% to 1.5% in China (IMF, 2019). Further accounting for uncertainty effects linked to trade, the ECB estimates that, over the medium term, an overall 10% increase in trade barriers (tariff and non-tariff) lowers US GDP by 1.5%, and global trade and global activity by more than 2.5% and 1%, respectively (ECB, 2018; 2019).

Other contributions explicitly study the newly implemented tariffs. BALISTRERI ET AL. (2018) use computational models of global trade under assumptions of perfect and monopolistic competition to evaluate the impact of tariffs. They estimate that the welfare cost of the trade tensions for the United States amounts to $124 billion, or around 1% of private consumption. BELLORA and FONTAGNÉ (2019) rely on a computable general equilibrium (CGE) model accounting for global value chains and imperfect competition. They find GDP losses of 0.4% for China and 0.3% for the United States due to the measures in place as of early January 2019. CACERES ET AL. (2019) study the potential long-term effects of three illustrative scenarios using a CGE trade model calibrated to 165 countries. They find small negative welfare effects, but large sectoral effects.

The current paper adopts a similar approach to those papers by using a general equilibrium trade model, but relies on a Ricardian framework. The paper is most closely related to CHARBONNEAU and LANDRY (2018), who use CALIENDO and PARRO's (2015) model to evaluate the impact of the recent tariff escalation on countries' welfare. Their paper finds moderate effects on long-run aggregate prices and output levels, but significant changes in trade flows and sectoral output reallocations. FELBERMAYR and STEININGER (2019) also propose an analysis of the growing trade tensions, using CALIENDO and PARRO's (2015) model augmented with an explicit specification of non-tariff trade barriers. They focus on the welfare and trade effects for the European Union and obtain results broadly in line with the findings of CHARBONNEAU and LANDRY (2018). The current paper differs from these in two aspects. First, it allows for endogenous trade balances, which is particularly relevant given the context of the growing trade tensions between the United States and China. Second, it proposes a Swiss-centric analysis.

Other approaches rely on US import data and import prices to estimate the impact of the newly implemented tariffs on the US economy. AMITI ET AL. (2019) use disaggregated US import data to estimate the impact of tariffs on prices. They find that the new 2018 import tariffs cost US consumers and US importing firms $3 billion per month in added tax costs and another $1.4 billion per month in deadweight welfare losses. FAJGELBAUM ET AL. (2019) estimate a supply-side model of the US economy to measure the aggregate and regional effects of US and retaliatory tariffs in general equilibrium. They find consumer and producer

losses from higher costs of imports of \$68.8 billion and an aggregate welfare loss of \$7.8 billion.

3   Theory and calibration background

The theoretical framework follows WICHT (2019), which calibrates a multi-country, multi-sector general equilibrium Ricardian trade model to study Switzerland's gains from trade. This section first summarizes the model's main characteristics and mechanisms, then gives an overview of the calibration strategy.[4]

3.1   Theoretical background

The theoretical framework follows CALIENDO and PARRO (2015) and has the following main characteristics. The model is static and in general equilibrium. In this context, counterfactual analysis studies a shock to underlying fundamentals, which induces a new steady state. This new steady state, in which wages and prices have fully adjusted, is compared to an observed initial steady state. Because of its static nature, the model cannot account for the transition to the new steady state, adjustment costs, dynamic or short-term effects.

The model has multiple countries and sectors. There is a finite number of countries N, which may trade between each other. There is a finite number of sectors S. By assumption, sectors are either tradable or nontradable. Tradable sectors, which may export, can be thought of as agriculture or manufacturing sectors. Nontradable sectors, which cannot export, can be thought of as services. The model and its calibration are thus tailored to trade in goods.

The model has a rich production setup, which is able to match value added and input-output structure at the sector and country level. A representative firm combines labor and intermediate inputs following a Cobb-Douglas production function with constant returns to scale. Labor is perfectly mobile across sectors, but perfectly immobile across countries. Consumers receive wages and have Cobb-Douglas preferences, spending a fixed income share on each sector's composite good.

The model is Ricardian. Markets are perfectly competitive, with prices equaling costs. Producers and consumers buy perfectly substitutable goods from the

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4   Model derivations and details on the calibration are given in WICHT (2019).

cheapest source. The model thus does not account for idiosyncratic firms, profits, or love of variety, as in a MELITZ (2003) framework. Instead, international trade is driven by technology, production costs, and trade costs. Formally, the trade share of sector s from exporting country i to importing country n follows a gravity equation given by:

$$\pi_{in}^s = \frac{T_i^s [c_i^s \kappa_{in}^s]^{-\theta^s}}{\sum_{k=1}^N T_k^s [c_k^s \kappa_{kn}^s]^{-\theta^s}}, \tag{1}$$

where T_i^s is the technology level, c_i^s are production costs, κ_{in}^s is the iceberg trade cost with $\kappa_{in}^s \geq 1$ if $i \neq n$ and $\kappa_{in}^s = 1$ if $n = i$, and θ^s is the trade elasticity.

As shown in EATON and KORTUM (2002), the technology parameter, T_i^s, and the trade elasticity, θ^s, are parameters of an underlying Fréchet distribution, which governs country-specific and sector-specific productivity draws for the production of goods. The probabilistic representation of productivity draws allows for a closed-form solution of trade shares and aggregate prices. Both parameters may be interpreted through the lens of Ricardian absolute and comparative advantages. A high T_i^s makes productivity draws within a sector on average higher, and a country more likely to export. Thus, the technology parameter can be thought of as the absolute advantage. A low θ^s implies a high productivity dispersion. All else being equal, a high productivity dispersion implies a stronger trade resistance to increases in trade costs. In other words, a high productivity dispersion implies a low trade elasticity. Thus, the dispersion parameter can be thought of as the comparative advantage.

International trade is costly. Bilateral iceberg trade costs of equation (1) are decomposed as:

$$\kappa_{in}^s = d_{in}^s (1 + \tau_{in}^s), \tag{2}$$

where d_{in}^s are non-tariff trade barriers and τ_{in}^s is the ad-valorem tariff rate applied by country n on goods of sector s from country i. Non-tariff barriers include distance and transport costs. Distant countries tend to have higher trade costs, which lower the probability of these countries trading with each other. Trade is thus shaped by gravity.

Within the context of escalating trade tensions between the United States and China, this paper focuses on the tariff component of equation (2). All else being equal, the direct effect of a bilateral tariff increase is to lower the corresponding bilateral trade share. A higher tariff rate makes foreign goods more expensive and

thus lowers the likelihood that the foreign country is the cheapest supplier. Tariff increases, however, affect trade shares beyond this direct price effect: they raise input prices. Higher prices in one sector further feed into prices in other sectors through the input-output structure and result in higher output prices, which in turn tend to make exports less competitive. Direct and indirect effects of trade shocks may be studied based on the model's general equilibrium nature and the complex sectoral production structure.

The theoretical framework makes one departure from CALIENDO and PARRO (2015) in that trade balances, whether surpluses or deficits, are endogenous. CALIENDO and PARRO (2015) provide a counterfactual analysis of the welfare and trade effects of NAFTA assuming either balanced trade or exogenous trade balances. These assumptions have several disadvantages. First, imposing balanced trade is a strong assumption to put on the data. Indeed, countries may run trade surpluses or deficits. For instance, the US trade deficit amounted to $875 billion in 2018; the Swiss trade surplus amounted to CHF30 billion in 2018, or just above 4% of GDP. Furthermore, reducing the US trade deficit, which largely drives the US current account deficit, has been an objective of the US administration (USTR, 2017; 2018a; 2018d; 2019). The assumption of exogenous trade balances, however, precludes assessing whether tariffs on selected trading partners may significantly affect the US aggregate trade deficit.[5]

Trade balances are modeled following CALIENDO ET AL. (2018). Labor income is not fully used up for consumption but is partly allocated to an international portfolio, which is then redistributed equally across countries. The trade balance – whether a surplus or a deficit – emerges from the difference between receipts from the international portfolio and expenses to it. Because these receipts and expenses depend on wages, trade balances adjust in any counterfactual equilibrium.

The model is solved in relative changes following the "exact hat algebra" method. DEKLE ET AL. (2008) first introduced this method in the context of Ricardian trade models. The counterfactual analysis thus studies the equilibrium change in welfare and trade following tariff shocks, which I describe in the following section.

The counterfactual analysis focuses on welfare and trade effects. Welfare effects are given by the change in real wage, or equivalently the change in real GDP. As shown by CALIENDO and PARRO (2015), the welfare effect may be decomposed into a final goods effect, an intermediate goods effect, and a sectoral linkages effect. Goods effects capture the change in goods' productivity, while the sectoral

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5   Imposing exogenous trade balances is consistent with economic theory within the model's static framework.
     But this assumption presents other theoretical drawbacks, which are examined in more detail in WICHT (2019).

linkages effect captures relative input price changes across sectors. The aggregate, country-level welfare effects may be decomposed into sectoral effects – they are simply an average of the change in sectoral labor productivity, weighted by consumer expenditure shares. Appendix B details the welfare equation and its decomposition. Trade effects are useful to illustrate the impact of the tariff shock on key economic indicators, which are often the focus of policy discussions. In particular, this paper focuses on changes in aggregate trade balances and real exports.

3.1 Calibration overview

Solving the model in relative changes greatly simplifies the calibration in terms of identification and data requirements. Following a change in fundamentals (for example, tariffs), the equilibrium change in wages and prices can be solved with initial data on trade shares, aggregate trade balances, tariffs, consumer preferences and production function parameters as well as estimates of trade elasticities.

The initial equilibrium is based on 2014 data. The model is calibrated for 34 countries, including Switzerland, and a constructed rest of the world (ROW). There are 20 sectors: 19 are tradable (covering agriculture and manufacturing sectors) and one is a composite nontradable service sector.[6] Initial trade shares are constructed using UN Comtrade bilateral trade data, World Integrated Trade Solution (WITS) tariff data from the World Bank, and OECD Structural Analysis (STAN) production data. Initial trade balances are taken from Comtrade data. The World Input-Output Tables (WIOT) are the main data source for the construction of consumer expenditure shares, sectoral value-added shares, and input-output linkages. Finally, sectoral trade elasticities are taken from CALIENDO and PARRO (2015).

Input-output tables are central to the model calibration and the counterfactual analysis. The quality of Swiss input-output tables, however, is notably uncertain. The Swiss Federal Statistical Office (SFSO) publishes national input-output tables, but prospective users are warned about their "experimental character".[7] Instead of using the SFSO tables, the calibration relies on a new dataset that identifies sectoral linkages between Swiss importers and foreign suppliers based on firm-level data from the Swiss Federal Customs Administration (FCA). Based on this new dataset, precise estimates of sectoral linkages between Switzerland and its trading partners are constructed.[8]

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6   Appendix A lists the sample countries and the sector classification.
7   See www.bfs.admin.ch/bfs/en/home/statistics/national-economy/input-output.html.
8   This new data source and its characteristics are presented in more detail in WICHT (2019). Note that the WIOT include Switzerland. However, the WIOT are not necessarily a viable alternative data source, as they build on the SFSO tables.

The calibration relies on estimates of trade shares and of sectoral linkages. Such estimates are essential to provide a Swiss-centric analysis of the growing trade tensions between the United States and China, since the tariff shocks may impact Switzerland only indirectly (for instance, through imports or input-output linkages). To illustrate the potential strength of each channel, Figure 1 highlights the exposure of Swiss sectors to US and Chinese trade. These figures are consistent with the model calibration.

Although the United States and China are not Switzerland's main trading partners, they still account for a significant share of Swiss imports. Figure 1a reports Swiss import shares from US and Chinese sectors, consistent with equation (1). The US manufacturing transport industries (motor vehicles and other transport) have relatively high trade shares with Switzerland (5.2% and 12.5%, respectively). The US other manufacturing and pharmaceutical industries similarly have high trade shares with Switzerland (9.5% and 7.6%, respectively). Chinese exports to Switzerland are concentrated in two sectors: textiles, and electronic and optical instruments (with trade shares of 21.6% and 10%, respectively).[9] Overall, Figure 1a suggests that Switzerland imports most US and Chinese goods from a limited number of sectors, and at different intensities.

Through input-output linkages, imports from the United States and China are distributed to all Swiss sectors. It is possible to go one step beyond Swiss import shares, and construct the input shares from the United States and China for Swiss sectors based on sectoral linkages. These input shares are calculated as the spending share allocated by Swiss sectors on manufacturing goods produced in the United States or China.[10] It is immediately apparent that there is a positive correlation between Swiss aggregate import shares (Figure 1a) and Swiss sectors' input shares (Figure 1b). This follows from the large diagonal entries of input-output tables, with Swiss sectors buying most inputs from their own sector. Nevertheless, all Swiss sectors have at least some exposure to US and Chinese goods. The cumulated input shares range from 2.1% in the agricultural sector to 19.1% in the textile industry. The counterfactual analysis examines how these aspects of Swiss exposure to US and Chinese trade translate into sectoral welfare effects.

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9   A large import share is not necessarily equivalent to a large trade value. For example, the US electronic and optical sector has a relatively small trade share with Switzerland (2.9%) but accounts for 12.1% of total Swiss imports from the United States.

10   Formally, the input share of Swiss sector k corresponds to $\Sigma_{s=1}^{S} \pi_{in}^{s} \rho_{n}^{sk}$, where the importing country n is Switzerland, the exporting country i is either the United States or China, and ρ_{n}^{sk} is the share of inputs bought by sector k of country n from sector s.

Figure 1: Swiss exposure to US and Chinese trade
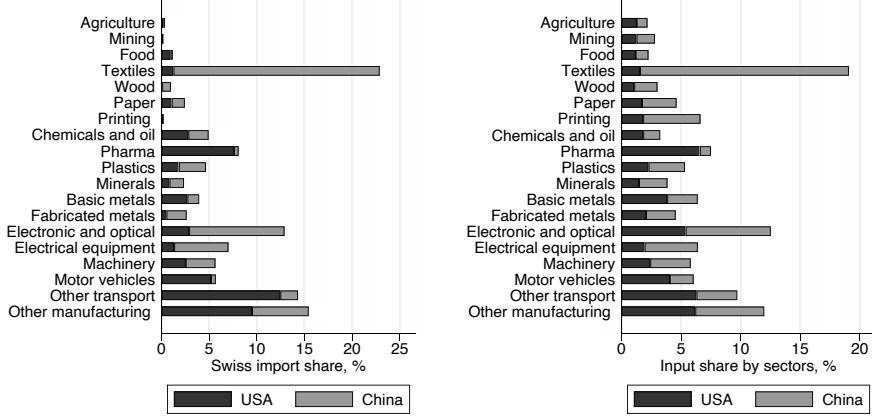
(a) Swiss import share (b) Sectoral input share

Notes: Figure (a) reports the Swiss import share (in percent) from US and Chinese sectors. This import share corresponds to the trade share π_{in}^s as defined in equation (1), where the importing country n is Switzerland and the exporting country i is either the United States or China. Figure (b) reports the input share, in percent, of Swiss sectors allocated on goods produced in the United States and China. The input share of Swiss sector k corresponds to $\sum_{s=1}^S \pi_{in}^s \rho_n^{sk}$, where the importing country n is Switzerland, the exporting country i is from sector s.

Sources: SNB, UN Comtrade, OECD STAN, own calculations.

4 Constructing the tariff shocks

The previous section outlined the theoretical framework and calibration approach, which are the basis for the evaluation of the counterfactual equilibrium resulting from any tariff change between sample countries. The counterfactual analysis focuses on the tariff escalation between the United States and China. Specifically, I solve for the counterfactual equilibrium resulting from two tariff shocks: (1) the tariff escalation between the United States and China as of May 2019, and (2) a hypothetical additional tariff escalation between the United States and China of all bilateral tariffs to 25%. This section describes the construction and magnitude of each tariff shock.

I solve for the change in trade costs using equation (2). Formally, I construct an $N \times N$ matrix of the change in trade costs $\hat{\kappa}_{in}^s$ for each sector $s = 1, \ldots, S$, given by:

$$\hat{\kappa}_{in}^s = \frac{1 + \tau_{in}^{s\,\prime}}{1 + \tau_{in}^s}, \tag{3}$$

where τ_{in}^s is the initial 2014 (trade-weighted) tariff rate applied by country n on goods of sector s from country i and $\tau_{in}^{s'}$ is the counterfactual tariff resulting from the tariff shock. If countries are not directly involved in the tariff escalation or if $i = n, \hat{\kappa}_{in}^s = 1$ since the counterfactual tariff is equal to the initial one. In contrast, if countries are involved in the tariff escalation, then the counterfactual tariff is higher than the initial tariff, i.e., $\tau_{in}^{s'} > \tau_{in}^s$, which in turn implies that the trade cost increases, i.e., $\hat{\kappa}_{in}^s > 1$.

Equation (3) has two characteristics that should be underlined. First, it is defined for some sector s. Tariff shocks are thus constructed at the sector level.[11] Tariffs, however, are defined at a much finer level of aggregation. Within a sector, goods may be subjected to a wide range of tariffs. To account for this higher level of aggregation, initial sectoral tariffs are constructed as the trade-weighted average of tariff headings within a sector. Trade weights are based on 2014 trade data. Counterfactual tariffs are constructed keeping trade weights fixed. Second, equation (3) shows that, by assumption, trade tensions only have an effect through tariffs. Non-tariff trade barriers – that is, d_{in}^s in equation (2) – are unchanged.

4.1   Shock 1: The tariff escalation between the United States and China as of May 2019

Bown and Kolb (2018) keep a detailed, up-to-date record of the newly introduced US trade barriers. They identify several "battles" of the growing trade tensions in which the US administration focuses on specific industries or trading partners. In some of these "battles", measures have already been implemented. For example, the US administration has imposed safeguard tariffs on solar panel and washing machine imports, arguing that such imports have harmed US domestic production (USTR, 2019). The US administration further invoked national security concerns to impose tariffs on steel and aluminum imports. In retaliation, several countries – including China, the European Union, and Canada – have imposed tariffs on US goods. In other "battles", concrete measures have not yet materialized. For example, the US administration has made repeated threats to impose tariffs on automobile products.

The US administration's measures cover a wide range of products and trading partners. However, this paper focuses on a single "battle" which is perhaps the most striking in terms of magnitude and intensity, namely, the measures against China. Starting in August 2017, the USTR initiated an investigation into Chinese trade practices, in particular regarding technology and intellectual property

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11   Details on the tariff shock construction are given in Appendix A.

practices. The investigation's conclusions gave grounds for the United States to impose tariffs on Chinese exports, and by August 2018, tariffs on $50 billion of Chinese exports, mainly intermediate and capital goods, were implemented. In retaliation, China imposed tariffs on a similar amount of US exports. However, the measures were not deemed sufficient, and tariffs on an additional $200 billion of Chinese exports – first subjected to a 10% ad-valorem rate and then to a 25% rate – were implemented. Again, China retaliated, imposing tariffs on an additional $60 billion of US exports. As of May 2019, this tariff escalation affected around half of the 2018 bilateral trade value between the two countries.

The first shock aims to evaluate the welfare and trade effects of the tariff escalation between the United States and China as of May 2019. To do so, the shock is built using the targeted product lists published by the USTR and by the Chinese Ministry of Commerce (MOFCOM).[12] Figure 2 summarizes the extent of this first tariff shock.

Figure 2:   Tariff shocks
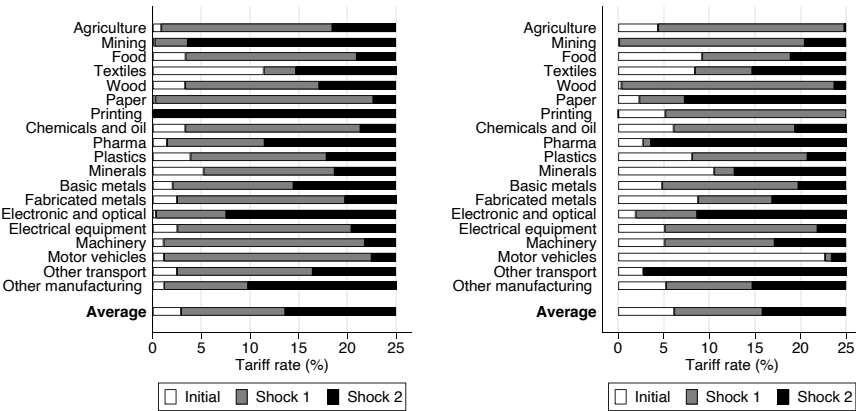
(a) US tariffs on Chinese exports   (b) Chinese tariffs on US exports

Notes: This figure shows the (trade-weighted) average tariff applied by (a) the United States on Chinese exports; and (b) China on US exports, in the initial year, after the first tariff shock (reflecting the tariff hike between the United States and China as of May 2019), and after the second tariff shock (all bilateral tariffs to 25%). Trade weights are fixed to 2014.

Sources: USTR, MOFCOM, UN Comtrade, OECD STAN, World Bank WITS, own calcualations.

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12   The links for each tariff wave are reported in the references (USTR, 2018b; 2018c; MOFCOM, 2018a; 2018b). Table A.1 gives more details on each tariff wave.

On the US side, the magnitude of the first tariff shock is significant. Figure 2a shows the initial and new tariffs applied by the United States on Chinese exports. Overall, initial US tariffs on Chinese exports are relatively low: the aggregate (trade-weighted) average tariff is 2.9%. With the exception of textiles and minerals, average tariffs are below 4% in all sectors. Following the first tariff shock, the aggregate average tariff increases by 10.7 percentage points, from 2.9% to 13.6%. Tariff increases at the sector level, however, are heterogeneous. For example, tariffs increase by more than 20 percentage points in three sectors (machinery, motor vehicles, and paper), while they increase by less than 5 percentage points in three other sectors (printing, mining, and textiles). Furthermore, Chinese sectors that account for most exports to the United States do not necessarily bear the largest tariff increases. For instance, the electronic and optical industry, the largest Chinese exporting sector to the United States (accounting for 18% of 2014 exports), is subjected to a 7.2 percentage point tariff increase. Textiles, the second largest Chinese exporting sector to the United States (15% of 2014 exports), are subjected to a 3.3 percentage point tariff increase.

On the Chinese side, the magnitude of retaliatory measures is similar to that of the United States. Figure 2b shows the initial and new import tariffs applied by China on US exports. Initial Chinese tariffs on US exports are higher than initial US tariff rates: the aggregate average tariff is 6.1%. At the sector level, US exports are initially taxed with tariff rates ranging from 1% in the mining and wood industries to 22.7% in the motor vehicles industry. Following the first tariff shock, the aggregate average tariff rate increases by 9.7 percentage points, from 6.1% to 15.8%. Again, sectoral exposure varies. The smallest tariff increases are applied to the motor vehicles and other transport industries (less than 1 percentage point), while the largest tariff increases are applied to the wood industry and to the agricultural sector (23.3 and 20.4 percentage points, respectively). In contrast to the United States, China has placed an emphasis on one of the main US exporting sectors: the agricultural sector, the second-largest exporting sector to China (accounting for 15.3% of 2014 exports), is subjected to one of the largest tariff hikes.

In conclusion, both US and Chinese import tariffs increase on average by a similar magnitude of around 10 percentage points. However, at the sector level, tariff increases are heterogeneous. The US and Chinese administrations have focused on different types of exports. The United States has applied tariffs on a large product range across manufacturing sectors, targeting mostly intermediate and capital goods. China, on the other hand, has notably targeted US agricultural exports. The main export category between the United States and China, electronic and optical equipment, is relatively spared by the first tariff shock.

4.2   Shock 2: A hypothetical additional tariff escalation between the United States and China (all bilateral tariffs to 25%)

In parallel with the tariff escalation, the United States and China have conducted talks to reach a bilateral trade agreement. So far, the talks have been unfruitful, with truce periods disrupted by announcements of additional tariffs and calls for stronger measures. Since May 2019, the situation has evolved. For instance, the United States has announced plans to implement tariffs on an additional $300 billion of Chinese exports. In response to this announcement, China has promised to retaliate. Part of this tariff wave was implemented by early September 2019. Furthermore, trade tensions have spilled over into other aspects of their bilateral economic relationship. For instance, the US administration has introduced sanctions against the Chinese multinational ICT company, Huawei, restricting its access to the US market.

Given these developments, the second tariff shock aims to capture worsening trade tensions. It considers a scenario in which the US and Chinese administrations enforce their threats and implement 25% tariffs on all bilateral trade between the two countries. Figure 2 reports the additional tariff increase such that all bilateral trade between the two countries is subject to a 25% tariff rate. Note that the second tariff shock takes the levels of bilateral tariffs after the first tariff shock as the baseline.

On the US side, the magnitude of the second shock is slightly larger than the first: the aggregate average tariff on Chinese exports increases by 11.4 percentage points (from 13.6% to 25%), compared to 10.7 percentage points following the first tariff shock. Sectors that were relatively spared by the first tariff shock see the largest tariff increases. For instance, the tariff on the electronic and optical industry increases by 17.4 percentage points. Sectors that were targeted in the first tariff shock, on the other hand, bear smaller tariff increases (around a 3 percentage point increase for the machinery, motor vehicles, and paper industries).

On the Chinese side, the magnitude of the second shock is slightly smaller than the first: the aggregate average tariff on US exports increases by 9.2 percentage points (from 15.8% to 25%), compared to 9.7 percentage points following the first tariff shock. Compared to the United States, China has less room to maneuver. Because of China's initially higher tariff rates, the second tariff shock is smaller at the aggregate level compared to the United States.

Overall, both tariff shocks are associated with significant tariff increases for both countries. However, there is significant heterogeneity at the sector level. In the next section, I evaluate the welfare and trade effects of both tariff shocks.

5   Quantifying the impact of trade escalations

This section presents the counterfactual analysis, in which I solve for the equilibria resulting from the tariff shocks presented in Section 4. I first evaluate the counterfactual equilibrium associated with the observed tariff escalation between the United States and China as of May 2019 (the first shock). I compare this counterfactual equilibrium to the initial equilibrium calibrated to 2014 data. Then I evaluate the counterfactual equilibrium associated with a hypothetical additional tariff escalation between the United States and China (the second shock, which sees all tariffs set to 25%). I compare this counterfactual equilibrium to the equilibrium resulting from the first shock. Welfare and trade effects thus represent additional effects associated with the second tariff shock, rather than the combined effect of both shocks.

In this section, I first present the aggregate welfare effects and their decomposition, as well as sectoral results. I then examine aggregate and bilateral trade effects, as well as changes in real exports across countries and selected sectors.

5.1   Welfare effects

The United States and China bear welfare losses following the first tariff shock; Switzerland sees a small welfare gain. As shown in column (1) of Table 1, the model predicts the largest decline in real GDP for China (−0.15%) and a slightly smaller decline in real GDP for the United States (−0.13%). Comparatively, other countries are relatively unaffected by the tariff escalation, although small welfare gains are possible. For instance, real GDP increases by +0.01% in Switzerland. NAFTA countries (i.e., Canada and Mexico) profit from the tariff escalation, with real GDP increasing by +0.03%.[13] NAFTA countries thus benefit from their proximity to the United States and their preferential trade agreement. Overall, however, the tariff escalation has negative implications, with world real GDP declining by −0.05%.

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13   For groups of countries, I report GDP-weighted averages of changes.

Table 1: Welfare effects

Country	Shock 1				Shock 2			
	Total	Final Goods	Intermediate Goods	Sectoral Linkages	Total	Final Goods	Intermediate Goods	Sectoral Linkages
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
United States	-0.13	-0.05	-0.07	-0.01	-0.07	-0.05	-0.06	0.03
China	-0.15	-0.03	-0.09	-0.03	-0.10	-0.03	-0.08	0.01
Switzerland	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
EU	0.01	0.00	0.00	-0.00	0.01	0.00	0.00	-0.00
NAFTA	0.03	0.01	0.03	-0.00	0.02	0.01	0.02	-0.00
Asia	0.01	0.00	0.01	-0.00	0.01	0.00	0.01	-0.00
Emerging	-0.00	-0.00	-0.01	0.00	0.01	-0.00	0.00	0.00
Other AEs	-0.01	-0.00	-0.01	-0.00	-0.01	-0.00	-0.01	-0.00
World	-0.05	-0.01	-0.03	-0.01	-0.02	-0.01	-0.02	0.01

Notes: This table reports the welfare change, in percent, measured by the change in real wage (real GDP), associated with each tariff shock. It further reports the decomposition of the welfare effects into the final goods, intermediate goods, and sectoral linkages effects. Appendix B details the welfare equation and its decomposition. The counterfactual equilibrium resulting from the first shock is compared to the initial calibrated equilibrium based on 2014 data. The counterfactual equilibrium resulting from the second shock is compared to the counterfactual equilibrium resulting from the first shock. I report GDP-weighted averages of the changes for groups of countries. EU comprises all EU countries of the sample; NAFTA (MEX, CAN); Asia (JPN, KOR, IND, IDN); Emerging (BRA, RUS, TUR, ROW); Other AEs (NOR, AUS).

Goods and sectoral linkages effects all contribute to welfare changes. Columns (2) to (4) report the welfare decomposition into the final goods effect, intermediate goods effect, and sectoral linkages effect. Following the first tariff shock, the decline in US and Chinese real GDP is mostly driven by the intermediate goods effect (–0.07% and –0.09%, respectively) and to a lesser extent by the final goods effect (–0.05% and –0.03%, respectively). Although the model predicts a larger aggregate welfare loss for China, the first tariff shock impacts US consumers more than Chinese consumers. Sectoral linkages contribute slightly to the welfare decline in the United States and China (–0.01% and –0.03%, respectively). Productivity losses in some sectors thus spill over to other sectors through input-output linkages, driving aggregate welfare losses. In line with the United States and China, the intermediate goods effect drives the slight welfare gains of Switzerland and NAFTA countries.

The United States and China bear additional losses following the second tariff shock, while Switzerland still benefits marginally. Column (5) shows the welfare change associated with an additional increase in bilateral tariffs. As with the first tariff shock, China has the largest decline in real GDP (–0.10%) and the United States has the second largest decline (–0.07%). The welfare gains for other countries tend to be smaller. Switzerland and NAFTA countries benefit marginally, with increases in real GDP of +0.01% and +0.02%, respectively. The overall welfare effect remains negative, with world real GDP declining by –0.02%.

In contrast to the first tariff shock, goods and sectoral linkages effects may offset each other following the second tariff shock. Columns (6) to (8) further report the welfare decomposition in the final, intermediate, and sectoral linkages effects. As with the results associated with the first shock, changes in real GDP due to the second tariff shock are mostly driven by the intermediate goods effect. For instance, intermediate goods effects in the United States and China are almost as large as their aggregate respective welfare losses, at –0.06% and –0.08%, respectively. Sectoral linkages, however, attenuate the welfare losses (+0.03% and +0.01% for the United States and China, respectively). This result suggests that smaller changes in input prices in some sectors mute the productivity losses in other sectors.

Overall, the first tariff shock generates the largest welfare effects. Even if the tariff escalation were to worsen between the United States and China, it would not have as much impact on welfare as the tariffs that were implemented first. Nevertheless, the welfare effects are small overall. In light of these results, it is important to make three remarks. First, it is known that welfare effects associated with changes in trade barriers are typically small in this type of model.

For instance, CALIENDO and PARRO (2015) find that tariff cuts associated with NAFTA lead to a +0.11% increase in US real GDP. Within the scope of the model, the first tariff shock would entirely offset the welfare gains realized by the United States through trade integration with its neighbors, Canada and Mexico. Second, the welfare effects of the tariff escalation are grounded by the theoretical model. Its static nature and its focus on goods trade, without consideration of investment or uncertainty, limit the transmission channels of the trade shock. Third, although the welfare effects are relatively small, I show that the trade effects, especially at the sector and bilateral country levels, may be significant.

5.2   Sectoral labor productivity effects

Compared to China, US manufacturing sectors bear larger productivity losses; Swiss manufacturing sectors exhibit small productivity gains. Table 2 reports the change in sectoral labor productivity for these three countries. Following the first tariff shock, labor productivity decreases in all US sectors. The electrical equipment, machinery, and electronic and optical sectors bear the largest losses (−1.96%, −1.50%, and −1.46%, respectively). Similarly, labor productivity decreases in all Chinese sectors. Compared to the United States, however, losses tend to be smaller. The other manufacturing sector loses the most (−0.89%). Labor productivity in the electronic and optical sector sees the second largest decrease (−0.47%). In contrast, Swiss labor productivity increases in all sectors with the exception of the other transport industry. Productivity increases by up to +0.2% in the textile industry.

Consistent with the aggregate results, sectoral labor productivity changes resulting from the second tariff shock are smaller than those associated with the first shock. They also show broadly similar patterns. On average, labor productivity in US sectors declines more than in Chinese sectors. The US textiles, other manufacturing, and electronic and optical sectors have the largest losses (−1.80%, −1.38%, and −1.05%, respectively). On the Chinese side, the other transport industry is the only sector with a productivity loss greater than 1%. Labor productivity declines in all Chinese sectors, while two US sectors see productivity gains: the chemical and oil (+0.02%) and mining industries (+0.04%). On the Swiss side, labor productivity increases in all sectors, with the exception of the other transport industry. The textiles industry sees the largest increase in productivity (+0.15%).

Table 2:   Sectoral labor productivity effects

Sector	Shock 1			Shock 2		
	US	**China**	**Switzerland**	**US**	**China**	**Switzerland**
	(1)	(2)	(3)	(4)	(5)	(6)
Agriculture	-0.09	-0.22	0.04	-0.00	-0.06	0.03
Mining	-0.02	-0.21	0.09	0.04	-0.15	0.05
Food	-0.19	-0.19	0.04	-0.02	-0.08	0.03
Textiles	-0.68	-0.16	0.20	-1.80	-0.09	0.15
Wood	-0.46	-0.20	0.04	-0.08	-0.08	0.03
Paper	-0.26	-0.26	0.05	-0.05	-0.16	0.04
Printing	-0.15	-0.16	0.02	-0.12	-0.10	0.01
Chemicals and oil	-0.16	-0.31	0.06	0.02	-0.18	0.04
Pharma	-0.11	-0.17	0.01	-0.03	-0.23	0.00
Plastics	-1.03	-0.28	0.06	-0.37	-0.15	0.05
Minerals	-0.73	-0.15	0.04	-0.23	-0.12	0.03
Basic metals	-0.33	-0.21	0.06	-0.11	-0.14	0.05
Fabricated metals	-0.61	-0.20	0.04	-0.09	-0.13	0.04
Electronic and optical	-1.46	-0.47	0.07	-1.05	-0.34	0.06
Electrical equipment	-1.96	-0.27	0.07	-0.07	-0.16	0.06
Machinery	-1.50	-0.36	0.05	-0.12	-0.24	0.05
Motor vehicles	-0.52	-0.23	0.04	-0.04	-0.18	0.05
Other transport	-0.43	-0.27	-0.02	-0.18	-1.39	-0.01
Other manufacturing	-1.26	-0.89	0.07	-1.38	-0.63	0.05
Services	-0.06	-0.09	0.01	-0.02	-0.07	0.01

Notes: This table reports the percentage change in sectoral labor productivity associated with the tariff shocks for the United States, China, and Switzerland. See Appendix B for a formal derivation of the sectoral labor productivity change. The counterfactual equilibrium resulting from the first shock is compared to the initial calibrated equilibrium based on 2014 data. The counterfactual equilibrium resulting from the second shock is compared to the counterfactual equilibrium resulting from the first shock.

Sector-level productivity losses can be significantly larger than aggregate welfare losses. This result is implied by the data and the calibration: consumers have small expenditure shares on those sectors with the highest losses. For instance, consumers spend most of their income on services (i.e., on nontradable goods). However, productivity changes in the nontradable sector are relatively small; trade shocks mainly impact the service sector's productivity through input-output linkages, which are not the main driver of welfare changes. In other words, the largest effects of trade shocks are found in tradable sectors, but they are muted at the aggregate level because of the low consumer expenditure shares on those sectors.

Country-specific consumer expenditure shares thus contribute to the lower aggregate US welfare losses compared to China, and the lower gains for Switzerland. Indeed, large consumer expenditure shares on nontradable sectors are especially prevalent in advanced economies: the calibration suggests that Swiss and US consumers spend only 16% of their income on tradable goods. In emerging market economies, this feature is still significant but less prominent: Chinese consumers spend 44% of their income on tradable goods. Thus, compared to China, the relatively larger share of consumer spending on services drives the lower US aggregate welfare losses, despite higher productivity losses in manufacturing sectors. Sector-level results are thus useful for shedding light on these underlying mechanisms. Considering the Swiss case, the large spending share on nontradable goods, and the service sector's low productivity gains, explain the small aggregate welfare gains.

5.3 Heterogeneous sectoral outcomes in Switzerland

The exposure of Swiss sectors to the United States or China is associated with heterogeneous sectoral outcomes. Table 3 shows how sectoral productivity gains vary depending on this exposure. In other words, it evaluates the impact of the import prices and input-output linkages channels as detailed in Figure 1.

Swiss sectoral outcomes are shaped by import shares from the United States and China. Panel (a) first relates the productivity gains of Swiss sectors and the aggregate Swiss import shares from US and Chinese sectors as seen in Figure 1a. It reports the productivity gains of Swiss sectors in the bottom 20%, median, and top 20% in terms of import shares from the United States and China. The results suggest that if a sector has a large import share from the United States, it exhibits lower productivity gains. This feature holds after both tariff shocks. In contrast, where Switzerland has a large sectoral import share from China, then this sector exhibits higher productivity gains. Again, this feature holds after both tariff

shocks. Overall, the results suggest that the productivity losses of US sectors weigh on Switzerland, while Chinese goods remain competitive.

Similarly, Swiss sectoral outcomes depend on their reliance on US and Chinese inputs. Panel (b) reports the productivity gains of sectors in the bottom 20%, median, and top 20% in terms of input shares from the United States and from China, as seen in Figure 1b. There is some evidence that the sectors relying most on US inputs have lower productivity gains following the first shock, while the effect largely disappears following the second shock. Nevertheless, Panel (b) shows that the opposite effect for China still holds: sectors with the largest input shares from China exhibit larger productivity gains. Following each tariff shock, Chinese goods remain relatively productive and Swiss sectors with access to such goods thus tend to have greater productivity gains. These results illustrate the differential effects of the tariff shocks on a third-party country: Swiss sectors exposed to the United States tend to gain less than those exposed to Chinese sectors.

Table 3:   Productivity gains for Swiss sectors and exposure to the United States and China

Panel (a): sectoral productivity changes across import shares

	Shock 1			Shock 2		
	Bottom 20%	Median	Top 20%	Bottom 20%	Median	Top 20%
	(1)	(2)	(3)	(4)	(5)	(6)
US	0.04	0.04	0.03	0.03	0.04	0.02
China	0.04	0.06	0.11	0.02	0.04	0.08

Panel (b): Sectoral productivity changes across input shares

	Shock 1			Shock 2		
	Bottom 20%	Median	Top 20%	Bottom 20%	Median	Top 20%
	(1)	(2)	(3)	(4)	(5)	(6)
US	0.05	0.05	0.02	0.04	0.04	0.01
China	0.03	0.05	0.09	0.02	0.04	0.07

Notes: Panel (a) reports the labor productivity changes of Swiss sectors in the bottom 20%, median, and top 20% in terms of import shares from the United States and from China. Panel (b) reports the labor productivity changes of Swiss sectors in the bottom 20%, median, and top 20% in terms of input shares from the United States and from China. Sectoral import shares and input shares are as reported in Figure 1. Sectoral real labor productivity changes are as reported in Table 2. See Appendix B for a formal derivation of the sectoral labor productivity change. The counterfactual equilibrium resulting from the first shock is compared to the initial calibrated equilibrium based on 2014 data. The counterfactual equilibrium resulting from the second shock is compared to the counterfactual equilibrium resulting from the first shock.

5.4 Aggregate trade effects

Each tariff shock implies little rebalancing at the country level. In particular, the US trade deficit is stable. Table 4 reports trade deficits in the initial equilibrium and following the first two tariff shocks. Following the first and second shocks, the US trade deficit declines by –0.01 and –0.02 percentage points, respectively. The model thus suggests that trade policy applied to a single trading partner cannot effectively reduce an aggregate trade deficit.

If anything, the model suggests that the tariff escalation has a greater impact on the Chinese trade surplus: following the first and second tariff shocks, it declines by –0.13 and –0.1 percentage points of GDP, respectively. Similarly, the trade deficit of NAFTA countries declines by –0.07 and –0.05 percentage points of GDP following the first and second shock, respectively, while the trade deficit of Asian countries declines by –0.04 percentage points of GDP following each tariff shock. In comparison, the Swiss trade surplus increases only marginally, by +0.01 percentage points of GDP. Total balances remain stable: the sum of deficits across all countries as a percent of world GDP declines by –0.01 percentage points following each tariff shock.

Table 4: Aggregate trade effects

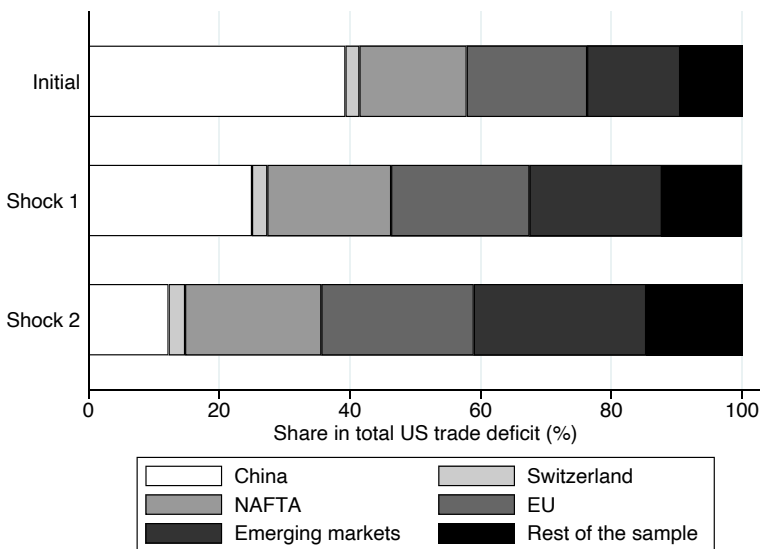|	Trade deficit, % of GDP		
	Initial	**Shock 1**	**Shock 2**
Country	(1)	(2)	(3)
United States	3.84	3.83	3.81
China	-7.10	-6.97	-6.87
Switzerland	-3.51	-3.52	-3.53
EU	-0.19	-0.20	-0.21
NAFTA	1.35	1.28	1.23
Asia	1.96	1.92	1.88
Emerging	-0.69	-0.73	-0.76
Other AEs	-0.94	-0.94	-0.94
World	1.99	1.98	1.97

Notes: This table reports the trade deficit in percent of GDP under the initial equilibrium, and under the counterfactual equilibria resulting from the first and second shocks. A trade deficit (surplus) is associated with a positive (negative) number. The world aggregate deficit is the sum of all deficits in percent of world GDP. EU comprises all EU countries of the sample; NAFTA (MEX, CAN); Asia (JPN, KOR, IND, IDN); Emerging (BRA, RUS, TUR, ROW); Other AEs (NOR, AUS).

5.5   Bilateral trade effects

There is little rebalancing at the country level. However, the tariff escalation between the United States and China may impact bilateral trade balances significantly. In particular, while the US measures do not succeed in reducing the aggregate US trade deficit according to the model, this does not mean that the tariffs against China have no impact on US trade. Figure 3 shows the composition of the US trade deficit across major trading partners in the initial equilibrium and under the counterfactual equilibria. Under the initial equilibrium, China accounts for 40% of the US bilateral trade deficit. The model predicts that the first tariff shock reduces China's share in the US trade deficit by almost half, from 40% to 22%. The second tariff shock leads to a further significant reduction of China's share in the US trade deficit (to 12%). Increases in the shares of emerging markets, the EU, and NAFTA countries compensate for the loss of China as the first US trading partner. Switzerland's weight among US trading partners remains stable: it contributes to around 2% of the US aggregate deficit.

Figure 3:   Bilateral trade effects

Notes: This figure shows the US trade deficit's decomposition across trading partners under the initial equilibrium, as well as under the counterfactual equilibria resulting from the first and second tariff shock. Countries are grouped as: NAFTA (CAN, MEX); EU (European Union countries of the sample); Emerging markets (BRA, RUS, TUR, ROW); Rest of the sample (JPN, KOR, IND, IDN, AUS, NOR).

5.6 Real exports

Despite relatively small aggregate welfare and trade effects, tariff shocks may lead to a significant trade reallocation between trading partners. To illustrate this mechanism, I now consider the change in real exports across countries and sectors, which are reported in Table 5.

While US real exports decline across all trading partners, Chinese real exports decline only to the United States; Swiss real exports to the United States increase. As shown in Panel (a), worldwide US real exports decline by –6.8% following the first tariff shock. This decline is largely driven by a significant decrease in real exports to China (–50.4%), but US real exports further decline across all other trading partners (for instance, –1.6% to Switzerland and –2.1% to EU countries). Similarly, worldwide Chinese real exports decline (–4.9%), driven by the decrease in real exports to the United States (–40.8%). Unlike the United States, however, Chinese real exports to their other trading partners increase (for instance, +5.8% to NAFTA countries and +3% to Switzerland). Thus, although welfare effects are larger in China than the United States, looking at real exports suggests that trade effects could be larger in the United States than in China. In particular, while China may divert some of its exports to other trading partners, US exports decline across all trading partners. Beyond the United States and China, total real exports of other countries see smaller changes. They range from a +0.2% increase in Switzerland to a +1.5% increase in NAFTA countries. Across trading partners, however, real exports may see larger changes. In particular, real exports to the United States increase across all exporters to compensate for the decline in Chinese real exports. Swiss real exports to the United States increase by +5.6%.

Sector-level real exports may see larger effects. Panel (b) reports the change in real exports across countries in the electronic and optical sector. This sector is of particular interest as it is one of the main exports between the United States and China: based on the initial 2014 data, it accounts for almost a third of bilateral trade between the two countries. This sector is also a major source of trade for Switzerland. It accounts for 16.3% of bilateral trade value between Switzerland and the United States, and for 34.6% of bilateral trade between Switzerland and China.[14]

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14   The model considers all goods within a sector to be perfect substitutes. Although a strong assumption, it is difficult to calibrate this type of model at a finer aggregation level, given data availability. Considering imperfect substitution between goods within a sector goes beyond this paper's scope. For an assessment of the welfare effects of the tariff escalation between the United States and China using finer data (see, for example, AMITI ET AL., 2019).

Table 5:   Change in real exports following the first tariff shock

(a) Total trade

Exporter	Importer							
	US	China	Switzerland	EU	NAFTA	Asia	Others	World
US	-	-50.4	-1.6	-2.1	-0.1	-2.6	-2.8	-6.8
China	-40.8	-	3.0	2.6	5.8	2.3	2.2	-4.9
Switzerland	5.6	-2.5	-	-0.4	1.1	-0.7	-0.9	0.2
EU	4.4	-2.2	0.1	-	1.7	-0.3	-0.4	0.4
NAFTA	3.1	-5.8	-2.2	-2.9	-	-3.2	-2.6	1.5
Asia	6.8	-2.5	0.3	0.0	2.7	-	-0.2	0.4
Others	6.5	-2.8	0.6	0.3	3.2	0.1	-	0.3
World	-4.5	-6.4	0.2	0.3	1.2	0.2	0.1	-

(b) Electronic and optical sector

Exporter	Importer							
	US	China	Switzerland	EU	NAFTA	Asia	Others	World
US	-	-63.0	-6.2	-7.1	-3.2	-7.4	-7.5	-15.8
China	-51.0	-	3.8	2.8	8.0	2.5	2.4	-6.2
Switzerland	23.9	-3.8	-	-1.1	2.4	-1.3	-1.5	1.0
EU	24.6	-3.3	0.5	-	3.8	-0.9	-0.8	2.2
NAFTA	21.5	-5.7	-2.0	-3.0	-	-3.3	-3.4	13.2
Asia	25.1	-2.8	0.8	-0.2	5.9	-	-0.5	0.7
Others	26.0	-2.2	1.6	0.5	6.3	0.3	-	1.7
World	-12.8	-5.6	1.1	0.6	5.1	0.7	0.5	-

Notes: This table reports the change in real exports, in percent, following the first tariff shock. Panel (a) reports the change in total exports across countries. Panel (b) reports the change in real exports of the electronic and optical sector across countries. Rows are exporters. Columns are importers. Results associated with the second tariff shock are reported in Table C.1. EU comprises all EU countries of the sample; NAFTA (MEX, CAN); Asia (JPN, KOR, IND, IDN); Others (BRA, RUS, TUR, ROW, NOR, AUS). For groups of countries, intragroup exports are excluded.

The sectoral results echo the aggregate results but show significantly larger magnitudes. US real exports decline by −15.8%. The largest decrease relates to real exports to China (−63%), but other export destinations also see significant decreases (−6.2% to Switzerland and −7.4% to Asian countries, for example) Chinese real exports towards the United States decline by −51%, but increase towards all other trading partners. For instance, real exports to NAFTA countries increase by +8% and by +3.8% to Switzerland. Finally, real exports to the United States increase for all countries but China; Swiss real exports to the United States increase by +23.9%.

Results relative to the second tariff shock, reported in Table C.1, are broadly in line with those associated with the first tariff shock. US real exports decline across all trading partners, while China's real exports decline only with respect to the United States. Furthermore, other countries' real exports to the United States increase. Sector-level results may be larger than those at the aggregate level.

6   Conclusion

This paper uses a general equilibrium Ricardian trade model to provide a quantitative assessment of the impact of the tariff escalation between the United States and China. In particular, it provides a Swiss-centric analysis of these effects. The counterfactual analysis details several patterns in the welfare and trade effects associated with the evaluated tariff shocks. Regarding welfare, both the United States and China bear losses. China has the largest welfare loss, followed closely by the United States. Chinese manufacturing sectors, however, tend to have lower declines in labor productivity compared to the United States. The model suggests that US manufacturing sectors are the hardest hit by the tariff escalation. Other countries may have small welfare gains; real GDP in Switzerland could increase slightly. The labor productivity of Swiss manufacturing sectors also increases slightly, especially in those sectors well-connected to China. Regarding trade, the tariff escalation implies little aggregate rebalancing, but bilateral trade between the United States and China collapses. To offset this effect, trade reallocation across trading partners and sectors is significant. The model thus suggests that the growing trade tensions between the United States and China offer significant challenges but also opportunities for bystander countries such as Switzerland.

Nevertheless, these results should be interpreted carefully within the scope of the theoretical framework. Model characteristics ground the results. The model produces estimates of the welfare and trade effects following a tariff escalation from one steady state to another, but it cannot account for the transition between steady states, which may entail significant frictions and costs. The model also focuses on a single transmission channel of trade shocks on real activity, but other channels may also play an important role. In particular, uncertainty may affect business confidence and stock markets, which in turn may impact investment. Furthermore, the model cannot account for safe haven pressures, which could result from uncertainty and could negatively impact Switzerland. Such channels could possibly lead to larger effects and offset the small gains of bystander countries such as Switzerland.

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A Data appendix

Countries: Australia, Austria, Belgium, Brazil, Canada, Switzerland, China, the Czech Republic, Germany, Denmark, Spain, Finland, France, the United Kingdom, Greece, Hungary, Indonesia, India, Ireland, Italy, Japan, South Korea, Lithuania, Mexico, the Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Sweden, Slovakia, Turkey, and the United States.

Sectors: The sector classification follows the ISIC revision 4 classification. The sectors and their corresponding two-digit headings (reported in parentheses) are the following: Agriculture, forestry and fishing (01–03); Mining and quarrying (5–9); Food products, beverages and tobacco (10–12); Textiles, apparel and leather (13–15); Wood (16); Paper (17); Printing and reproduction of recorded media (18); Chemicals and coke, refined petroleum products and nuclear fuel (19–20); Pharmaceuticals (21); Rubber and plastics products (22); Other non-metallic mineral products (23); Basic metals (24); Fabricated metal products, except machinery and equipment (25); Computer, electronic and optical products (26); Electrical equipment (27); Machinery and equipment n.e.c. (28); Motor vehicles, trailers and semi-trailers (29); Other transport equipment (30); Furniture and other manufacturing (31–32); Services (>32).

Tariff shocks: Table A.1 summarizes the timing, magnitude, and source of the tariff waves taken into account for the construction of the first tariff shock. I make the following assumptions to construct the shocks. The USTR and MOFCOM publish lists of goods subjected to tariffs at an HS 8-digit level. Whenever an HS 6-digit level good contains at least one HS 8-digit level good targeted by the tariff hike based on these lists, I apply the corresponding tariff rate to the entire HS 6-digit level good. This approximation is necessary because UN Comtrade data only make HS 6-digit level bilateral trade data available, which are used to construct trade weights. Whenever an HS 6-digit level good is targeted by several waves, I apply the highest ad-valorem tariff rate. Regarding the Chinese September 2018 tariff wave, the 5%, 10%, 20%, and 25% ad-valorem rates apply to 313, 600, 749, and 2,017 goods, respectively.

Table A.1:   Shock 1 – waves of tariff escalation

US tariffs				
Date	**Trade value (USD bn)**	**# of goods**	**Tariff rate**	**Source**
April 2018	50	876	25	USTR (2018b)
September 2018	200	3,038	25	USTR (2018c)
Chinese tariffs				
Date	**Trade value (USD bn)**	**# of tariff headings**	**Tariff rate**	**Source**
June 2018	50	469	25	MOFCOM (2018a)
September 2018	60	3,679	5,10,20,25	MOFCOM (2018b)

B Theory appendix

Although the model derivations are reported in WICHT (2019), it is useful to describe the welfare equation briefly. As in CALIENDO and PARRO (2015), the welfare change is given by:

$$
\frac{\hat{w}_n}{\hat{P}_n} = \underbrace{\prod_{s=1}^{S} (\hat{\pi}_{nn}^s)^{-\frac{\beta_n^s}{\theta^s}}}_{\text{Final goods}} \underbrace{\prod_{s=1}^{S} (\hat{\pi}_{nn}^s)^{-\frac{\beta_n^s(1-\alpha_n^s)}{\theta^s \alpha_n^s}}}_{\text{Intermediate goods}} \underbrace{\prod_{s=1}^{S} \prod_{k=1}^{S} \left[\hat{P}_n^k / \hat{P}_n^s \right]^{-\frac{\beta_n^s \rho_n^{ks}(1-\alpha_n^s)}{\alpha_n^s}}}_{\text{Sectoral Linkages}} \tag{4}
$$

where $\hat{x} = \frac{x'}{x}$ is the ratio of counterfactual value to initial value of variable x, $\beta_n^s > 0$ is the consumer spending share with $\sum_{s=1}^{S} \beta_n^s = 1$, α_n^s is the value added share with $0 \leq \alpha_n^s \leq 1$, ρ_n^{ks} is the input share of sector k employed in the production of sector s with $\sum_{k=1}^{S} \rho_n^{ks} = 1$, w_n is the wage rate, P_n^s is the price of the goods supplied by sector s in country n, and $P_n = \prod_{s=1}^{S} \left(\frac{P_n^s}{\beta_n^s}\right)^{\beta_n^s}$ is the aggregate price index of country n. The change in welfare may be decomposed into a final goods effect, intermediate goods effect, and sectoral linkages effect. The final and intermediate goods effects capture the change in productivity of goods supplied to country n. The sectoral linkages effect captures the changes in inputs used per worker. If the prices of inputs increase more than sector s's output price, then welfare declines.

The change in labor productivity in sector s of country n is given by:

$$\frac{\hat{w}_n}{\hat{P}_n^s} = \left(\hat{\pi}_{nn}^s\right)^{-\frac{1}{\theta^s}} \left(\hat{\pi}_{nn}^s\right)^{-\frac{1-\alpha_n^s}{\theta^s \alpha_n^s}} \prod_{k=1}^{S} \left[\hat{P}_n^k / \hat{P}_n^s\right]^{-\frac{\rho_n^{ks}(1-\alpha_n^s)}{\alpha_n^s}}.$$

Weighting $\dfrac{\hat{w}_n}{\hat{P}_n^s}$ by the corresponding consumer expenditure share β_n^s across all sectors yields equation 4.

B Additional tables

Table C.1:   Change in real exports following the second tariff shock

(a) Total trade

Exporter	Importer							
	US	China	Switzerland	EU	NAFTA	Asia	Others	World
US	-	-30.0	-1.3	-1.7	-0.5	-2.1	-2.2	-3.1
China	-44.6	-	2.7	2.3	4.6	2.1	2.1	-2.7
Switzerland	4.2	-1.9	-	-0.3	0.6	-0.6	-0.7	0.2
EU	3.1	-1.6	0.1	-	1.0	-0.3	-0.3	0.3
NAFTA	1.9	-4.5	-1.3	-1.8	-	-2.1	-1.6	0.9
Asia	5.4	-1.9	0.2	-0.0	1.7	-	-0.1	0.4
Others	6.5	-2.5	0.4	0.1	2.0	0.0	-	0.4
World	-2.1	-3.2	0.1	0.2	0.7	0.2	0.2	-

(b) Electronic and optical sector

Exporter	Importer							
	US	China	Switzerland	EU	NAFTA	Asia	Others	World
US	-	-87.0	-5.2	-6.0	-3.1	-6.3	-6.4	-11.6
China	-85.0	-	3.4	2.5	6.4	2.3	2.2	-5.2
Switzerland	18.0	-3.2	-	-1.0	1.6	-1.3	-1.3	1.0
EU	18.6	-2.7	0.5	-	2.7	-0.8	-0.7	2.0
NAFTA	16.9	-4.1	-1.2	-2.0	-	-2.2	-2.3	11.4
Asia	19.1	-2.2	0.8	-0.1	4.5	-	-0.3	1.0
Others	19.4	-2.0	1.0	0.2	4.5	-0.0	-	1.5
World	-9.6	-3.9	0.9	0.6	3.9	0.6	0.5	-

Notes: This table reports the change in real exports, in percent, following the second tariff shock. Panel (a) reports the change in total exports across countries. Panel (b) reports the change in real exports of the electronic and optical sector across countries. Rows are exporters. Columns are importers. Results associated with the first tariff shock are reported in Table 5. EU comprises all EU countries of the sample; NAFTA (MEX, CAN); Asia (JPN, KOR, IND, IDN); Others (BRA, RUS, TUR, ROW, NOR, AUS). For groups of countries, intragroup exports are excluded.

Comment on "The impact of trade wars on Switzerland: A quantitative assessment" by Laurence Wicht

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The paper by LAURENCE WICHT addresses a hotly debated and highly policy-relevant topic. It analyzes the implications for Switzerland of a trade war between the United States and China. The author uses a state-of-the-art structural trade model to study the long-term welfare and trade effects that follow from a bilateral US-China trade war. The paper compares the steady state with tariffs that prevailed before the escalation with tariff increase scenarios. Thus, the focus is purely on the long-term effects. The main question is how Switzerland, as a third country, is impacted by a bilateral tariff escalation between the United States and China.

In order to make a quantitative assessment of the long-term impacts of a trade war, the study uses a quantitative general equilibrium model of international trade. The theoretical framework closely follows the model of CALIENDO and PARRO (2015). This is an extension of the Ricardian workhorse model of modern quantitative trade theory introduced by EATON and KORTUM (2002). The extension explicitly models input-output linkages. Moreover, the model used by Wicht allows for endogenous trade balances, which is a relevant feature in the context of trade wars. Thus, Wicht builds on the latest developments in the international trade literature to conduct a counterfactual analysis to study the long-term impacts of a trade war on Switzerland.

The study is closely related to CHARBONNEAU and LANDRY (2018), who use a similar framework to analyze the effect of recent tariff increases on other countries' welfare. The contribution of the paper by LAURENCE WICHT is in the Swiss-centric approach of the analysis. The study builds on another paper by the same author. WICHT (2019) applies the framework outlined above to analyze Switzerland's gains from trade and describes the novel dataset on Swiss input-output tables. As there are methodological issues with existing input-output tables for Switzerland, using a dataset that relies on a different approach to estimate international input-output linkages is a nice feature of the paper.

Wicht estimates small welfare effects for the tariff escalation scenarios. In the case of a bilateral US-China trade war, where both countries impose a tariff rate of 25% on all imports from the other country, real GDP declines by 0.2% in the United States and by 0.25% in China. Other countries are relatively unaffected.

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In Switzerland, real GDP remains more or less unchanged (+0.03%). Structural trade models in the spirit of EATON and KORTUM (2002) usually find small costs from tariff wars. There are two main reasons for this. First, bilateral trade wars typically generate small welfare effects in a modern Ricardian trade model because of trade diversion. Second, these models make steady state comparisons and therefore cannot take potentially costly transition effects into account. There is, for example, no role for adjustment costs or uncertainty.

Transition effects are hard to quantify. Although they might be sizeable, the economic literature has not yet established a thorough framework for their quantification. However, even a structural model focusing on long-term outcomes can provide some insights into the short-term effects. The counterfactual analysis by WICHT illustrates that a bilateral US-China tariff war induces a significant reallocation of trade flows across trading partners and sectors. In the short-term, such reallocation effects can be very costly (e.g. firms need to locate alternative supplies of inputs or find new destination markets for their products). Trade volumes that are diverted to new destination markets typically involve adjustment costs for firms. Moreover, if the sectoral trade structure changes, adjustment costs for workers, who potentially need to switch industries, could also be significant.

Two aspects of the analysis could be extended for future work. First, the author could analyze the reallocation effects in more detail in order to gauge the magnitude of the transition effects. For instance, one could try to provide a rough estimate of the resources that are reallocated in the long-term, measured in terms of GDP. As the focus of the paper is on Switzerland, a more detailed discussion about the changes in the Swiss trade structure would be particularly interesting.

Second, other aspects of the impact on Switzerland could be explored further. How does Switzerland, as a small open economy, differ from other third countries, such as Germany? Wicht decomposes the welfare effect into final goods, intermediate goods, and sectoral linkage effects. A discussion about the importance of the various channels compared to other countries could shed more light on the role of certain characteristics of the Swiss economy. Finally, how does the effect on Switzerland depend on the fact that Swiss exports are relatively specialized on electronics and optical goods, which is one of the main areas of trade between the US and China?

To sum up, the paper by LAURENCE WICHT uses a state-of-the-art structural trade model to analyze the long-term trade and welfare effects on Switzerland of a bilateral US-China trade war. It makes a very valuable contribution to the debate over the consequences of trade wars for Switzerland. In future work, a more detailed analysis of the magnitude of the reallocation effects and the role of certain Swiss-specific characteristics could shed light on further aspects of this highly policy-relevant topic.

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Swiss market access in a global trade war

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We measure the extent to which Swiss market access would be affected in a global trade war. After calculating the change in tariffs at the tariff-line level that Swiss exporters would face in a trade war, we then aggregate them at the industry, destination market, and global level using theoretically well-grounded aggregation methods first introduced by Anderson and Neary (1996). Our results suggest that Swiss market access will be seriously jeopardized in the event of a global trade war, with an increase in tariffs faced by Swiss exporters of 34 percentage points. The largest increases in tariffs would be experienced in large destination markets where Swiss exporters currently benefit from low export barriers (the European Union, the United States and Japan). Chemicals, machinery, professional and scientific equipment, and food experience above average increases in tariff barriers.

1   Introduction

We estimate the impact that a global trade war would have on tariff barriers faced by Swiss exporters in the rest of the world by estimating the change in tariffs if all countries were to set their tariffs non-cooperatively. The idea is that during a global breakdown in international cooperation, all countries exploit their market power in international markets by imposing higher tariffs on goods in which they have more market power (EDGEWORTH, 1894; JOHNSON, 1953). The extent to which this affects Swiss exporters depends on the composition of the Swiss export bundle across products and destination markets, and on whether Switzerland's trading partners are already imposing non-cooperative tariffs in the existing regime. Importantly, this could happen even when the partner is a member of the World Trade Organization (WTO) because the multilateral trading system offers enough flexibility for member countries to set tariffs non-cooperatively, either because they face a large number of uncoordinated small exporters (LUDEMA and MAYDA, 2013) or because there is "tariff water" in their tariff schedule (NICITA, OLARREAGA and SILVA, 2018).[2]

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2   "Tariff water" is the difference between the tariff bound which is negotiated in the WTO and the most-favored nation (MFN) applied tariff. WTO member countries cannot apply tariffs above their negotiated tariff bounds, but many member countries do have bound tariffs which are several orders of magnitude larger than their applied tariffs, creating what is referred to as "tariff water" (or "tariff overhang").

Results suggest that the average exporting country in the world experiences a 23 percentage point increase in tariff barriers in the rest of the world. This average increase hides a lot of heterogeneity, with 30 countries facing tariff in- creases of less than 5 percentage points and 30 countries facing tariff increases of more than 40 percentage points. The average increase for Switzerland is above average, at 34 percentage points. This represents more than a tenfold increase in current tariff barriers faced by Switzerland, which are below 3%. There is an even larger increase in barriers faced in the largest destination markets for Swiss exporters: the European Union, the United States and Japan increase their barriers on Swiss exporters by more than 40 percentage points. Destination markets and sectors in which Swiss exporters currently face low tariff barriers experience the largest increases. Among the sectors with above-average increases are large export sectors such as chemicals, professional and scientific equipment, machinery and food.

These results are important for at least three reasons. First, even if a global trade war is an unlikely scenario, it cannot be fully excluded, and to correctly value the existing level of international cooperation one needs to know what the counterfactual would be in its absence. Second, results can help identify coalitions of countries that are interested in preserving the existing level of international trade cooperation. Indeed, results show that there is a lot of heterogeneity in the increase in tariff barriers faced by exporters of different countries. Antigua and Barbuda, with a 0.1 percentage point increase in tariffs faced by exporters in the rest of the world, is likely to be less interested in preserving the existing level of cooperation than Lesotho, where exporters would face a 93 percentage points increase in tariffs barriers. And last but not least, the results help identify Switzerland's export industries that would have an incentive to cooperate to prevent the escalation of current international trade tensions.

In estimating the change in market access for Swiss exporters, we face three main challenges. First, we need to estimate the change in tariffs in the case of a global trade war. Because we define a trade war as a move to the non-cooperative tariff where market power is fully exploited, we first need to have an estimate of what such a change in tariffs would imply. Using a bit of theory, we show that the change from a cooperative to a non-cooperative tariff is simply given by the inverse of the export supply elasticity of the rest of the world. To implement this, we use the recent estimates of export supply elasticities of the rest of the world provided by country and tariff line by NICITA, OLARREAGA and SILVA (2018). The second challenge is that not all countries may be at their cooperative tariffs initially, either because they are outside the WTO (and therefore they can already set non-cooperative tariffs, as shown by BRODA, LIMÃO and WEINSTEIN (2008)), because there is a preferential trade agreement and they have moved beyond the

multilateral cooperative tariff, or because there is tariff water in their schedule and, as shown by NICITA, OLARREAGA and SILVA (2018), they are already setting tariffs non-cooperatively. We introduce all these elements to estimate the change in tariffs that would occur as countries move from their current tariffs to the non-cooperative tariff. The third challenge is to aggregate all these tariff changes across destination markets or industries in a meaningful manner. Simple or export-weighted averages are atheoretical and suffer from well-known biases. Simple averages give the same weight to tariff lines with very different economic meaning, and export-weighted averages suffer from a downward bias as sectors which face very high export barriers tend to export less and therefore have a lower weight. We use a theoretically well-grounded aggregation procedure in the spirit of ANDERSON and NEARY (1996) and similar to their mercantilistic measure in ANDERSON and NEARY (2003). The aggregate measure we use to capture market access barriers is the MA-OTRI[3] developed by KEE, NICITA and OLARREAGA (2009). It is defined as the uniform tariff that, if it were to be applied to all goods in all destinations, would lead to the same level of exports as currently observed. In order to compute this measure, we need estimates of import demand elasticites at the tariff-line level in all countries, which we borrow from Kee, Nicita and Olarreaga (2008).

We are not the first to compute changes in protection associated with a move to non-cooperative tariffs in the case of a trade war. GROSSMAN and HELPMAN (1995) and BAGWELL and STAIGER (1999, 2002, 2016) provide theoretical underpinnings for such an assumption, while OSSA (2014, 2015) provides some estimates. The main difference between these studies and the current paper is that we consider that in the presence of tariff water, initial tariffs are already set at their non-cooperative levels as shown in NICITA, OLARREAGA and SILVA (2018). Given that around three-quarters of WTO members' tariff lines allow for tariff water, this implies that the increase in tariffs in the case of a tariff war are likely to be much smaller than previously estimated. On the other hand, we also consider that many tariffs in the world are set below their MFN levels because of preferential trade agreements (PTAs) and therefore a break in cooperation would imply even larger increases in protection. Even if ESPITIA, MATTOO, MIMOUNI, PICHOT and ROCHA (2018) estimate that only 5% of global exports benefitted from a preference of more than 5 percentage points, the difference can be important for some products in some destination markets.

The rest of the paper is organized as follows. Section 2 discusses the methodology used to predict changes in tariffs in the case of a global trade ward. Section 3 presents the aggregation procedure used to calculate the global index of increases

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3   Market Access-Overall Trade Restrictiveness Index.

in tariff changes, or aggregates by destination market or product. Section 4 presents data sources and Section 5 presents the results. Section 6 provides some concluding remarks and caveats.

2   A trade war and changes in tariffs

In order to assess the change in tariffs during a trade war, we first need to determine tariff levels as countries move from a cooperative to a non-cooperative equilibrium. In a non-cooperative setting, we assume that countries set tariffs (T) in order to maximize an objective function (G) that includes both social welfare (W) and lobbying contributions by firms, as in GROSSMAN and HELPMAN (1994):

$$G(T) = W + \beta\pi \tag{1}$$

where β is the weight given to firms' profits in the government's objective function, and π is the firms' profits.

After some rearranging, the first-order condition of the government's problems yields:

$$T^N = \frac{\beta z}{e} + \frac{1}{e*} \tag{2}$$

where T^N is the optimal non-cooperative tariff, z is the output-to-import ratio, e is the import demand elasticity and $e*$ is the export supply elasticity of the rest of the world. The first term captures political economy motives for tariffs, and depends on the weight that the government gives to firms' profits (and their political lobbying contributions) in its objective function, the relative size of the sector with respect to imports, and the import demand elasticity for Ramsey pricing reasons. The more elastic the import demand elasticity, the larger the deadweight loss of a given tariff, which makes the decision to increase a tariff more costly in terms of welfare. The second term captures the non-cooperative rationale for exploiting the importer's market power by imposing higher tariffs on sectors in which it has more market power (i.e., those in which the inverse of the export supply elasticity of the rest of the world is smaller). Indeed, with a more inelastic export supply elasticity in the rest of the world, a given tariff will lead to a larger decline in world prices as the decline in demand is mainly absorbed by a price decline when exported quantities adjust little to price changes.

In a cooperative equilibrium such as that offered by the WTO, member countries choose, through negotiation, the tariff that maximizes the joint welfare of the

home country and its trading partners (GROSSMAN and HELPMAN, 1995; BAGWELL and STAIGER, 2002):

$$G^{WTO}(T) = G + G^* = (W + \beta\pi) + (W^* + \beta^*\pi^*) \tag{3}$$

where the variables with asterisks denote the variables of the other WTO members.

After some rearranging, the maximization of the joint welfare function in the cooperative equilibrium yields:

$$T^C = \frac{\beta z}{e} \tag{4}$$

where T^C is the cooperative tariff. Only the political economy term of the non-cooperative tariff (T^N) remains when tariffs are set cooperatively. Indeed, the market power term disappears from the cooperative tariff because the decline in world prices associated with a higher tariff in the importing country implies a simple redistribution of income from the exporter to the importer. When tariffs are set cooperatively, there is no more room for redistributing income across trading partners, and the market power term vanishes.[4]

The change in tariffs associated with a move from a cooperative to a non-cooperative equilibrium is then given by the difference between (2) and (4):

$$\Delta T^{war} = T^N - T^C = \left(\frac{\beta z}{e} + \frac{1}{e^*}\right) - \left(\frac{\beta z}{e}\right) = \frac{1}{e^*} \tag{5}$$

Thus, assuming that political economy forces are not affected by the trade war (which is arguably not a trivial assumption), the change in tariffs following a move from a cooperative to a non-cooperative tariff is simply given by the inverse of the export supply elasticity of the rest of the world. Using the estimates of NICITA, OLARREAGA and SILVA (2018), we can estimate the distribution of tariff changes in a move from cooperative to non-cooperative tariffs (see Figure 1).

Figure 1: Distribution of the inverse of export supply elasticity in the rest of the world

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4 Note that in NICITA, OLARREAGA and SILVA (2018), the cooperative tariff is negatively correlated with the inverse of the export supply elasticity of the ROW. The reason is that we allow for exporters to lobby their government to help reduce tariffs in the importing country in the cooperative equilibrium and they have stronger incentives to lobby their government when the importer has market power. So, the traditional market power term vanishes in the cooperative equilibrium, but a new term appears that is negatively correlated with market power.
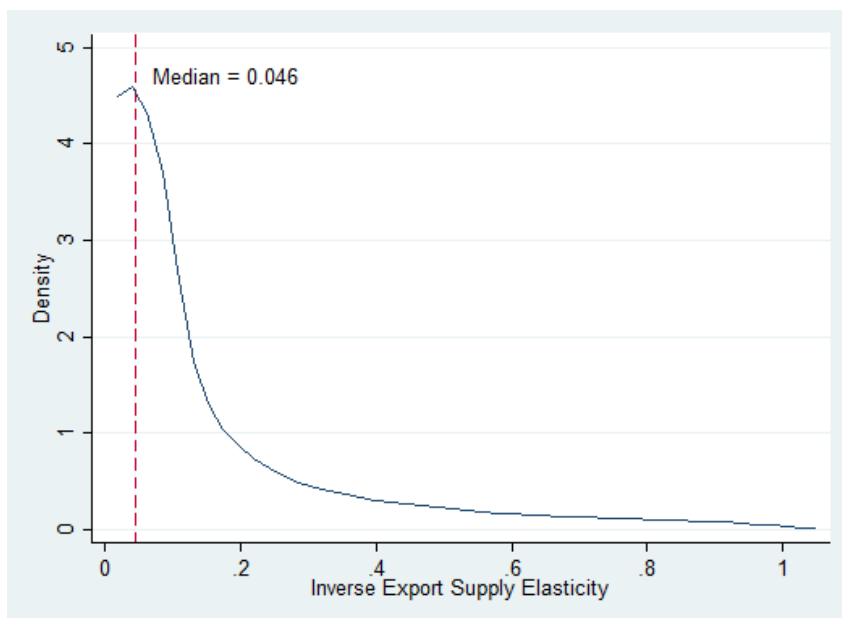
The median increase in tariffs is equal to 4.6 percentage points. Thus, even if all tariffs were to change from cooperative to non-cooperative, the median increase will be relatively modest. This is because most countries have little market power.

Note, however, that even "small countries" can have some market power in some markets. For example, among the 21,000 tariff lines in the top 10% in terms of market power, i.e., those with an increase in tariffs when moving from the cooperative to the non-cooperative tariff of more than 125%), Burundi has seven tariff lines and Uruguay more than 100. Of course, the European Union and the United States have more than 1,400 tariff lines each, and they will see the largest increases in their import tariffs partly because they have more market power than others.

There is, however, a second reason why the increase in tariffs in the European Union and the United States is likely to be larger than in other WTO members. Around three-quarters of tariff lines of WTO members have some tariff water. As shown by NICITA, OLARREAGA and SILVA (2018), in the presence of tariff water, WTO members will already be setting non-cooperative tariffs, whereas in the absence of tariff water, WTO members set their tariffs cooperatively. The

European Union, the United States and other high-income countries tend to have much less tariff water in their tariff schedules than low-income countries do (see Figure 2). Thus, high-income countries such as the European Union and the United States tend to have a larger share of their tariff lines which are currently set cooperatively. A trade war is thus likely to lead to a higher increase in tariffs in high-income countries with low levels tariff water than in countries with tariff water or that are outside the WTO and therefore are already setting their tariffs non-cooperatively.

Figure 2: Tariff water in WTO members tariff schedules by level of income
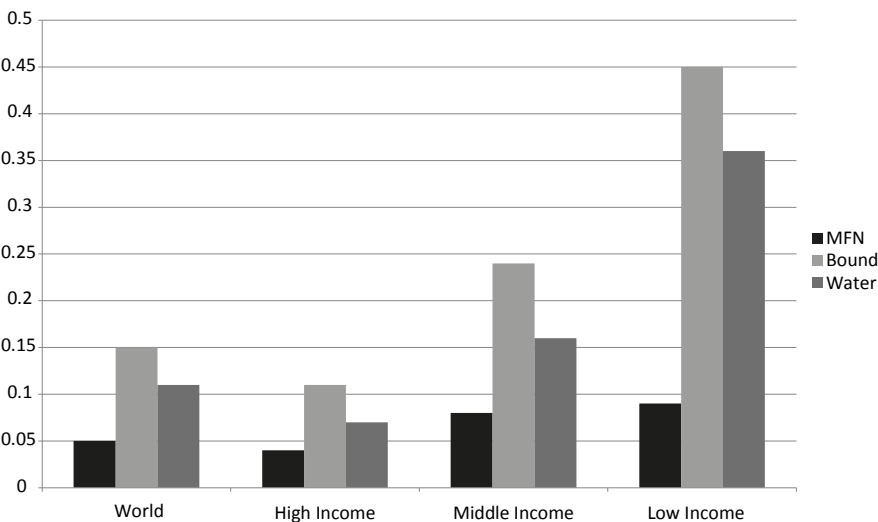
Note: Tariff water is defined as the difference between the bound tariff in WTO members' tariff schedules and their MFN applied tariff.

Source: Data are from NICITA, OLARREAGA and SILVA (2018).

Another reason why changes in tariffs may be larger than those implied by the move from cooperative to non-cooperative tariffs is the presence of a large share of PTAs in which countries have reduced their bilateral tariffs beyond the cooperative level implied by MFN tariffs in the WTO.

In order to consider these different elements, we define the change in tariffs due to a trade war according to the following rule:

$$\Delta T^{war} = \begin{cases} 1/e^*, \text{ if } T^{mfn} = T^{bound} \text{ and No PTA} \\ 0, \text{ if } T^{mfn} < T^{bound} \text{ (or not a WTO member) and No PTA} \\ 1/e^* + (T^{mfn} - T^{pref}) \text{ if } T^{mfn} = T^{bound} \text{ and PTA} \\ T^{mfn} - T^{pref}, \text{ if } T^{mfn} < T^{bound} \text{ and PTA} \end{cases}$$

where T^{mfn} is the MFN tariff, T^{bound} is the bound tariff, and T^{pref} is the preferential tariff on imports from a preferential partner.

This rule is our departure from existing work as in OSSA (2014, 2015), which defines the move towards a trade war as given by the first line. It indicates that this will only be the case if there is no PTA in place between the two countries and if there is no tariff water. Note that if there is no tariff water, this move would necessarily be WTO-incompatible. In the presence of tariff water, there will be no change in tariffs as the importer will already be setting non-cooperative tariffs. In the presence of a PTA (and in the absence of tariff water), the change in tariff will be given by the move from the cooperative to the non-cooperative tariff, plus the difference between the MFN tariff (i.e., the cooperative tariff) and the preferential tariff. This move would also be WTO-incompatible as the new tariff will necessarily be above the bound. Finally, if there is tariff water and a PTA in place, then the change in tariff is simply given by the difference between the MFN tariff (which in this case is the non-cooperative tariff) and the preferential tariff.

To examine the importance of this departure from the existing literature, in a robustness section we modify the rule for tariff changes so that in all cases the increase in tariffs is given by $1/e^*$. The implicit assumption is that importers are always at their cooperative tariff (no PTAs and no tariff water).

3   Aggregating across products and markets

As discussed by ANDERSON and NEARY (1996), measures of protection obtained by aggregating tariffs across products and markets using simple and trade-weighted measures are often difficult to interpret . The authors instead propose using theory-driven measures, such the uniform tariff that, if applied to all imported goods by a country, would keep welfare constant. In a subsequent paper (ANDERSON and NEARY, 2003) they extend this idea to what they call a "mercantilist index of protection", which is the uniform tariff that, if applied to all goods in a given country, would keep the imports of that country constant. KEE, NICITA and OLARREAGA (2009) apply this idea to market access and develop what

they labelled *MA-OTRI*, which is the uniform tariff that, if it were to be applied by all importing partners on all goods, would lead to the same level of exports in the exporting country. More formally,

$$\text{MA-OTRI}_c: \sum_n \sum_p x_{ncp}(\text{MA-OTRI}_c) = \sum_n \sum_p x_{ncp}(T_{ncp}) = x_c^0 \tag{6}$$

where x_{ncp} are exports of good n by country c to partner p and x_c^0 is the current level of exports of country c given the observed levels of bilateral tariff protection, T_{ncp}, in partner p on exports of country c of good n.

Taking the total differential of (6), noting that total exports of c should remain unchanged, and rearranging yields:

$$\text{MA-OTRI}_c = \frac{\sum_n \sum_p x_{ncp}\varepsilon_{np}T_{ncp}}{\sum_n \sum_p x_{ncp}\varepsilon_{np}} \tag{7}$$

where ε_{np} is the trading partner p's import demand elasticity for good n.

Equation (7) suggests that MA-OTRI_c is the weighted average of the tariffs applied by different trading partners on products exported by country c, where the weights used in this average are represented by the product between the trading partner p's import demand elasticity and the exports from country c to this trading partner. By giving more weight to tariff lines with a large import demand elasticity, we avoid the downward bias that occurs when higher tariffs reduce exports of goods with a more elastic import demand. And by giving more weight to products with a large export share, we focus on economically meaningful tariffs.

Note that (7) can be calculated for existing levels of tariffs or for changes in tariff such as those induced by a tariff war and given by equation (6). In the empirical section, we do both and compare how tariff changes correlate with existing levels of tariff protection across products and markets. We calculate these indices at the global level for all countries to compare the increase in export barriers that Swiss exporters would face in the case of a trade war with the export barriers that exporters in other countries would face.

But we also calculate the indices by destination market for Swiss exporters and by broad groups of products across all destination markets of Swiss exporters to identify the destination markets and the sectors in which Swiss exporters are likely to experience the largest increases in tariffs in the event of a trade war. These last two indices of increases in tariff protection are given by:

$$\text{MA-OTRI}_{cp} = \frac{\sum_n x_{ncp} \varepsilon_{np} \Delta T_{ncp}^{war}}{\sum_n x_{ncp} \varepsilon_{np}} \qquad (8)$$

$$\text{MA-OTRI}_{ci} = \frac{\sum_{nei}\sum_p x_{ncp} \varepsilon_{np} \Delta T_{ncp}^{war}}{\sum_{nei}\sum_p x_{ncp} \varepsilon_{np}} \qquad (9)$$

The index MA-OTRI$_{cp}$, described in expression (8), measures the average tariff increase faced by country c in exporting to country p, while the index MA-OTRI$_{ci}$, described in expression (9), measures the average tariff increase faced by exports of goods in industry i from country c across all trading partners.

4   Data

Expressions (7)-(9) indicate that measuring the average level of or the change in tariffs faced by exporters requires data on tariffs (MFN, preferential and bound), elasticities (the rest of the world's export supply and price elasticity of import demand) and trade flows, as well as information on PTAs. We use information on MFN and preferential tariffs from the World Integrated Trade Solution (WITS) at the 6-digit level of the Harmonized System. All data are for the year 2011.[5] Data on tariff bindings also at the 6-digit level of the Harmonized System are provided by the WTO. The information on elasticities come from two sources: information on price elasticity of import demand is obtained from KEE, NICITA and OLARREAGA (2008); information on the rest of the world's export supply is from NICITA, OLARREAGA and SILVA (2018). Finally, information on the presence of PTAs is obtained from BAIER ET AL. (2014).

5   Results

We proceed in three steps. We first compare the increase in tariffs that would be experienced by Swiss exporters in case of a global trade war to the increases that would be experienced from exporters in other countries. We then focus on which are the destination markets in which Swiss exporters would experience the largest increase, and finally examine which are the sectors that would be more exposed.

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5   We performed a robustness using pre-crisis tariff data for the year 2006 and obtained very similar results
     (available upon request). The correlation between the change in tariffs faced by all exporters is 0.6.

Figure 3   Tariff faced by exporters of all countries in the rest of the world

Very Restrictive (more than 7.5%)
Restrictive (5% to 7.5%)
Average (2.5% to 5%)
Almost Free (less than 2.5%)
No data
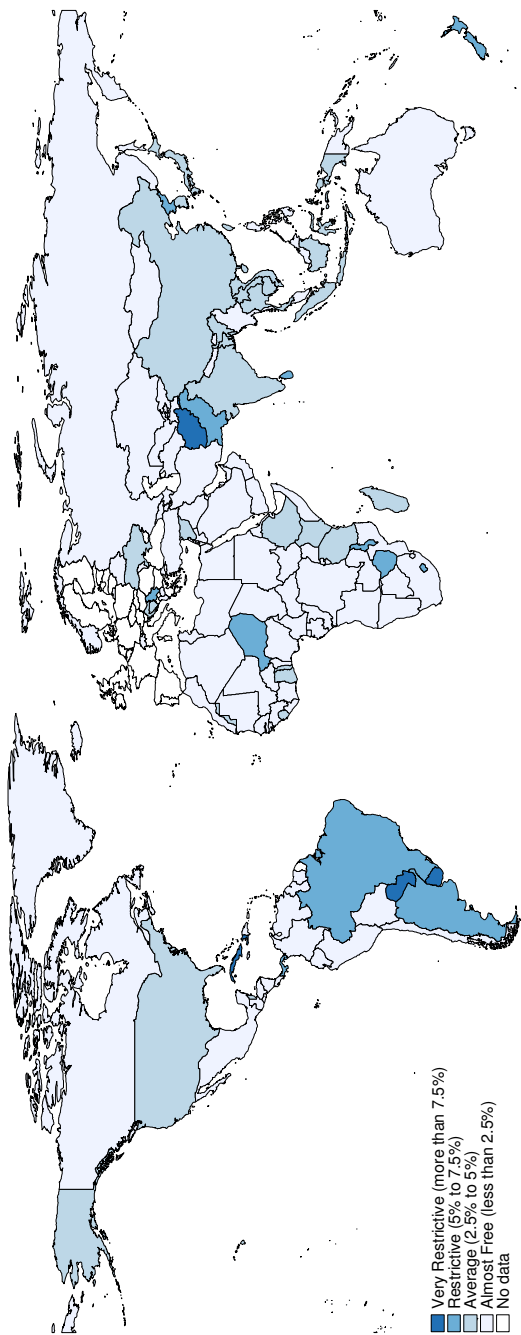
Note: The map provides the estimates for each country of MA-OTRI given the observed levels of tariff protection in 2011 in the rest of the world.

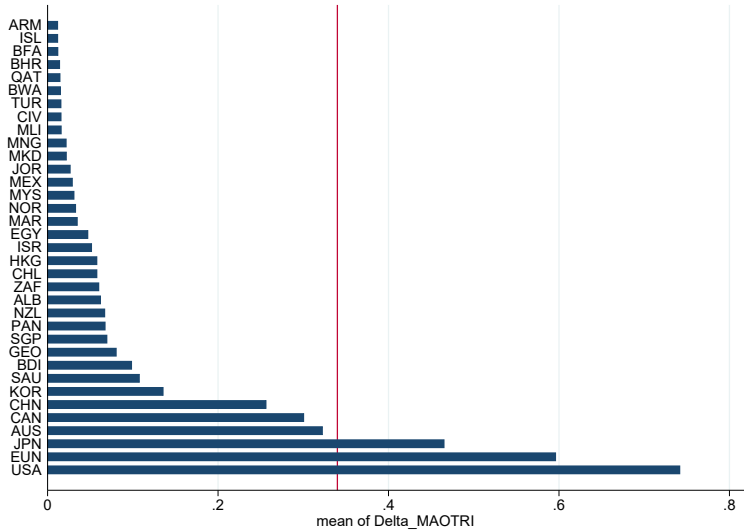**Figure 4:**   Increases in tariff barriers faced by exporters in the rest of the world
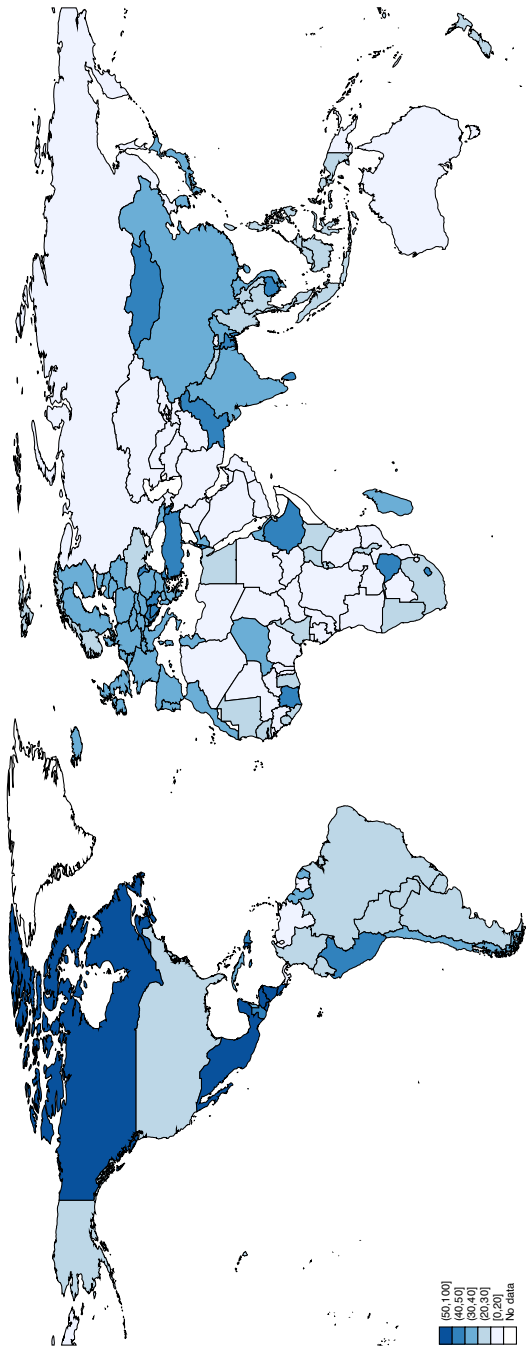
Note: The map provides the estimates for each country of changes in MA-OTRI due to a global trade war.

We start by assessing the extent of current tariff protection faced by each country's exporters in the rest of the world. Figure 3 provides a heat-map of the MA-OTRI of each exporting country. The average MA-OTRI in 2011 is 4%, with only 15 countries facing an MA-OTRI above 10%. A trade war would dramatically change this, as can be seen in Figure 4. The average MA-OTRI will rise by 23 percentage points, and 15 countries will face an increase in their MA-OTRI of more than 50 percentage points. Swiss exporters would experience an above-average increase in their MA-OTRI of 34 percentage points, which is within the top quartile of changes in MA-OTRI that world exporters would experience.

The reason for the relatively large increase in the MA-OTRI faced by Swiss exporters in the case of a trade war is partly explained by the composition of the Swiss export bundle in terms of products and destination. Let us start with the countries in which Swiss exporters would face the largest increases in MA-OTRI. Figure 5 shows these in ascending order. The red vertical line provides the average increase experienced by Swiss exporters of 34 percentage points. The largest (and only above-average) increases for Swiss exporters are experienced in the United States, the European Union and Japan. The only other markets where Swiss exporters experience increases in MA-OTRI of more than 20 percentage points are China, Canada and Australia. In Saudi Arabia and Korea the increases in MA-OTRI are 11% and 14%, respectively. In all other countries, the increases in MA-OTRI during a trade war would be below 10 percentage points. In 108 destination markets, the increase in MA-OTRI that Swiss exporters would face is below 1 percentage point. The main reason for this is that many of these destination markets have little market power on which to act. The above-average increase in MA-OTRI in Switzerland is explained by a few large destination markets with significant market power (the United States, the European Union, Japan, China, Canada and Australia), with little water in their tariff schedule and, in the case of the European Union and China, a PTA in place.

Together, these six markets represent more than 62% of Swiss exports. As shown in Figure 6, which orders the top destination markets in terms of their share of Swiss exports, the largest increases in MA-OTRI will tend to be experienced in the largest destination markets. The exception is India, which is the second destination market for Swiss exporters after the EU, with a market share of 11%, and where Swiss exporters would face no increase in tariffs due to the large presence of tariff water in India's tariff schedule.

Figure 5: Increases in tariff barriers faced by Swiss exporters by destination market

Figure 6: Larger increases in tariff barriers for Swiss exporters in larger markets

The positive relationship between export share and the increase in MA-OTRI is confirmed by Figure 7, which correlates the share of each destination market in total Swiss exports with the increase in MA-OTRI that would be experienced in each market. There is a strong positive and statistically significant correlation (and this is with or without the European Union, which is the top destination market by several orders of magnitude).

Figure 7:   Increases in tariff barriers and Swiss exports

On the other hand, there is a negative relationship between the existing level of MA-OTRI faced by Swiss exporters in 2011 and the increase in MA-OTRI following a trade war, as shown in Figure 8. Thus, the markets where the largest increases in MA-OTRI would occur are not only the largest markets in terms of exports today, but are also the markets where Swiss exporters currently face the lowest tariff barriers.

The sectors where Swiss exporters would face above-average increases in tariff barriers in the rest of the world include chemical products, professional and scientific equipment, machinery and food manufacturing, which are all important exporting sectors. But other sectors, such as non-ferrous metals, electrical machinery and tobacco manufactures, which are also relatively important in terms of export shares experience below-average increases, as shown in Figure 9.

Figure 8:   Larger increases in tariff barriers in markets with low tariff barriers
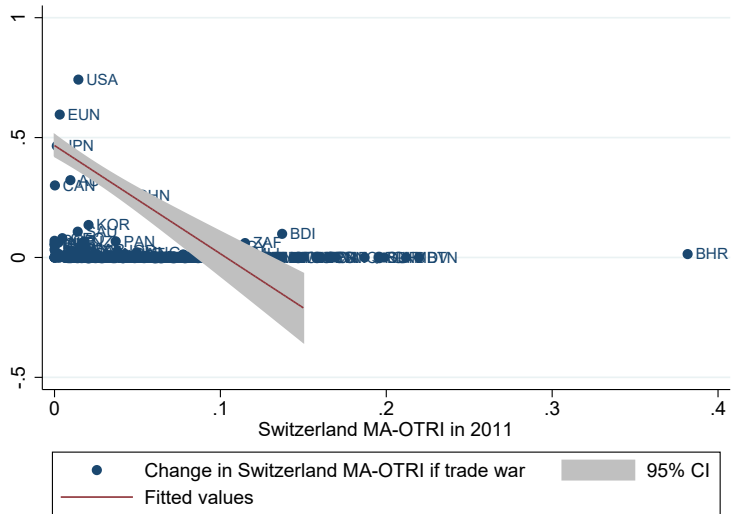

Note: The figure provides the correlation between increases in tariff barriers faced by Swiss exporters and the current level of tariff protection in each destination market.

Figure 9:   Tariff increases by ISIC sector faced by Swiss exporters
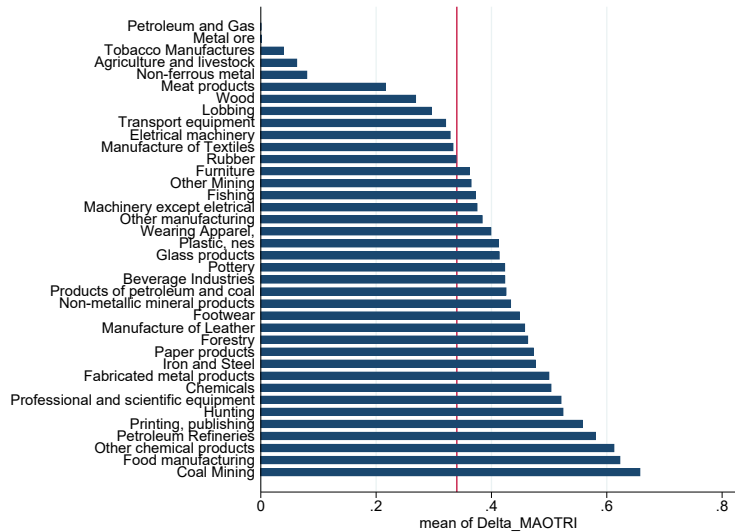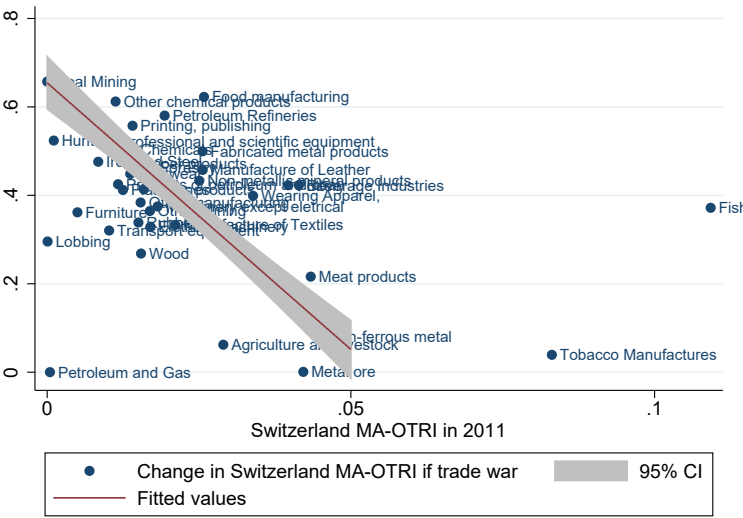

Note: The figure provides the tariff increase by sector experienced by Swiss exporters in the case of a trade war.

Figure 10:   No correlation between tariff increases by ISIC sector faced by Swiss exporters and their export share
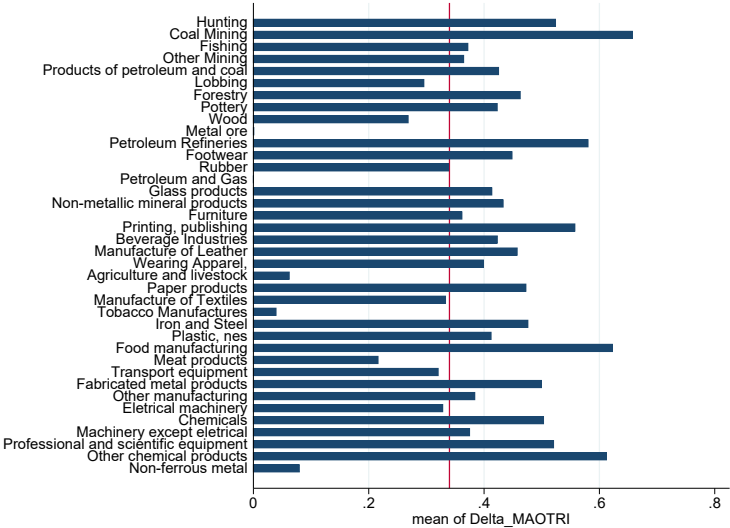
Note: The figure provides the estimates for Switzerland of changes in MA-OTRI by sector due to a global trade war but where sectors are ordered by size.

Figure 11:   Larger increases in tariff barriers in sectors currently facing low tariff barriers

Note: The figure provides the correlation between changes in MA-OTRI due to a trade war and the level of MA-OTRI in 2011.

The lack of correlation between export shares and tariff increases across industries is illustrated in Figure 10. Industries are ranked in increasing order in terms of their export value, with hunting being the sector with the lowest export share among 3-digit ISIC revision 2 industries. As can be seen, there is no clear pattern between the export share of each industry and the tariff increase it experiences, contrary to what we observed for destination markets, where larger increases in tariff barriers are experienced in larger destination markets.

Finally, the sectors where Swiss exporters faced lower tariff barriers in 2011 would be the sectors with the largest increases in tariff barriers in a global trade war. This is illustrated in Figure 11, which shows a strong negative and statistically significant correlation between 2011 levels of MA-OTRI and the changes in MA-OTRI by ISIC export sector.

5.1   Robustness with no PTAs and no tariff water

To assess the quantitative importance of our assumptions that the presence of PTAs and tariff water must be taken into account when calculating tariff increases in the case of a trade war, we provide a summary of the results where these two assumptions are removed and tariff changes are simply given by a move from cooperative to non-cooperative tariffs (i.e., $1/e*$).

The correlation between the measures of tariff increases across industries with and without the two assumptions on PTAs and tariff waters is 0.78, indicating that the pattern of tariff increases faced by Swiss exporters across different industries is not affected by these assumptions. However, the simple average level of tariff increases across industries increases quite significantly by 10 percentage points. Differences in some industries can be as high as 64 percentage points. This is the case for tobacco, for example, which is explained by the fact that many of the countries to which Switzerland exports tobacco have a lot of tariff water in their schedules. Because we previously assumed that countries with tariff water will already be setting non-cooperative tariffs, we previously had no tariff changes in these countries, and therefore a small increase in tariff protection for Swiss tobacco exporters. In other industries the difference in tariff is negative, as for example in forestry products, where the tariff increase is 5% lower when we do not take into account the presence of PTAs and tariff water. This is explained by the fact that Switzerland exports a large share of forestry products to countries with no tariff water, but with whom it has a PTA. Because we no longer consider the move from the preferential tariff to the MFN tariff in these types of countries, the tariff increase faced by Swiss exporters is smaller.

In sum, while for some industries the difference in assumptions could lead to very different results, the overall picture in terms of tariff increases following a global trade war remains quite similar when we take into account the presence of tariff water and preferential trade agreements.

6   Concluding remarks

We have estimated the effect that a global trade war would have on the tariffs faced by Swiss exporters in the rest of the world. We assume that a global trade war will imply all countries moving to their non-cooperative tariffs. Contrary to the existing literature, we have taken into consideration the presence of preferential trade agreements and tariff water when considering the moves to non-cooperative tariffs. Results suggest that a global trade war will result in a tenfold increase in tariff barriers faced by Swiss exporters. They will face the largest tariff increases in their largest destination markets (European Union, United States and Japan) and in countries and industries in which today they face the lowest levels of tariffs.

Our results should be taken with caution, as there are several caveats. First, a trade war may not necessarily imply a move to the non-cooperative tariff determined by the importer's market power (EVENETT, 2018). In repeated games, apparently irrational or self-hurting behavior can pay off, and these are not considered here. Second, to estimate the change in tariffs, we assume that political economy forces for and against tariff protection will remain unchanged in the case of a global trade war. This is unlikely to be the case, and one can think of reasons why forces lobbying for and against protection will change in the case of a trade war. Third, we have only considered tariff changes, but because non-tariff measures can also be used for protectionist reasons, tariff changes may not need to be that large. Finally, the current trade war between the United States and some of its trading partners is far from a global trade war and it has only affected a limited share of world trade. Nevertheless, the exercise in this paper can shed light on what would happen if the current tension were to spread across the entire world trading system.

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Export hurdles in practice

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The theme of protectionism has received plenty of media coverage since Donald Trump's election as President of the United States and the subsequent trade war with China. It is a geographically widespread phenomenon, which also encompasses Europe and Switzerland. For this study, we surveyed just under 560 exporting Swiss small and medium-sized enterprises (SMEs) to obtain their views on the issues of protectionism and export barriers. More than 40% believe these do not pose any challenge, or at most only a minor one. The resurgence of protectionism since 2016 appears to have had only a slight impact on Swiss SMEs so far. Just 23% of respondents expressed the view that the situation had deteriorated compared to five years ago, whereas half did not perceive any change. This could be attributable to the fact that just 20-30% of surveyed SMEs are experiencing trade obstacles in the most important European markets. Barriers are higher in other markets, however. Just under 50% of SMEs perceive barriers when exporting to the United States, and this figure rises to as much as 54% when it comes to the third most important region – China/Hong Kong. The principal instrument of the current trade war, namely, conventional tariffs, is problematic for just under half of respondent companies. However, customs procedures and the workload associated with the provision of conformity assessments and product origin documentation, which are all categorized as non-tariff trade obstacles, are perceived as greater challenges. When it comes to obstacles to the export business, the two most significant factors of all – ranking above both tariff-based and non-tariff barriers – are perceived by respondent companies to be the price of their offering and prevailing exchange rates.

1   Overview of the SME export economy: SMEs responsible for 45% of Swiss goods exports

The state of the Swiss economy is heavily influenced by small and medium-sized enterprises (SMEs). More than 99% of Swiss companies have fewer than 250 employees, and overall these companies account for just under two-thirds of all jobs in Switzerland. The contribution made by SMEs to national value creation is estimated at around 58%.[2]

As a small, open economy, Switzerland has been unable to avoid the repercussions of a slowing global economy in 2019, with the export sector increasingly affected. Explaining factors for the slowdown in global economic growth include international trade conflicts, particularly between the United States and China,

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1   This article was written in August 2019.
2   As of 2016; source: OECD (2018).

and the various uncertainties associated with these. Sentiment among SME manufacturers, which in 2018 was as strong as it has been at any point since the economic crisis of 2009, has deteriorated significantly over the course of 2019. This can be attributed not least to the weakening of export demand.

A slowdown in global economic development tends to be felt most of all by businesses that are integrated into international value creation chains. The same is true of an increase in protectionism or a proliferation of trade barriers, both of which primarily affect exporters. Although these two phenomena can also affect companies whose businesses are focused on the domestic market – for example, via changes in import conditions, higher import prices, or general uncertainties in the financial markets – non-exporting companies themselves do not have to grapple with tariffs, new product requirements, or certification processes abroad.

According to our calculations, which are based on the goods exports statistics of the Swiss Federal Customs Administration and the company structure statistics of the Swiss Federal Statistical Office, around 8% of all Swiss companies export goods (see Figure 1). Here there is a strong correlation between company size and export activity: among micro firms with up to nine employees, exporting activity is fairly rare (6%). Small and medium-sized enterprises sell their goods abroad much more frequently (in 21% and 39% of all cases, respectively). Most active of all here are large companies, 58% of which export their goods. As is implied by the name, the goods exports statistics do not include services. Unfortunately, there is no comparable data source for the latter. But if service exports were to be included, the proportion of exporting companies would probably work out rather higher.

Nonetheless, SMEs make a sizable contribution to total Swiss goods exports: in 2016 their overall share amounted to 45% (see Figure 2). Companies with more employees also tend to make a higher contribution. The proportion of total goods exports by value accounted for by SMEs varies greatly from country to country. Switzerland lies broadly in the European mid-pack, between extreme examples such as Belgium on the one hand, where SMEs account for almost 70% of national export activity, and France on the other, where SMEs contribute less than 20%. This strengthens our assumption that while the export situation of SMEs may not be the principal driver of overall Swiss development, it is nonetheless decisive.

Figure 1   Larger companies more likely to export

Proportion of companies that export goods, by size category, 2016
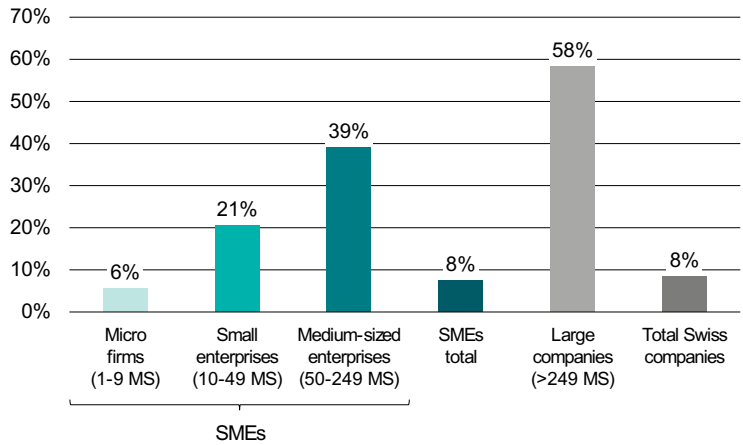
Source: Swiss Federal Customs Administration; SFSO; Credit Suisse.

Figure 2   45% of Swiss goods exports come from SMEs

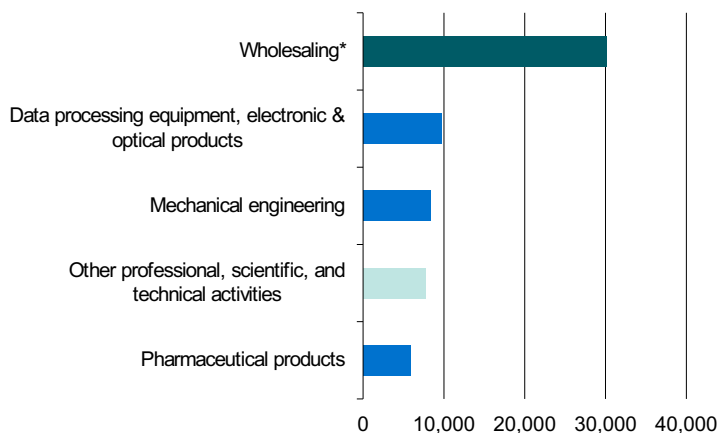Proportion of total goods exports (in CHF or euros), 2016
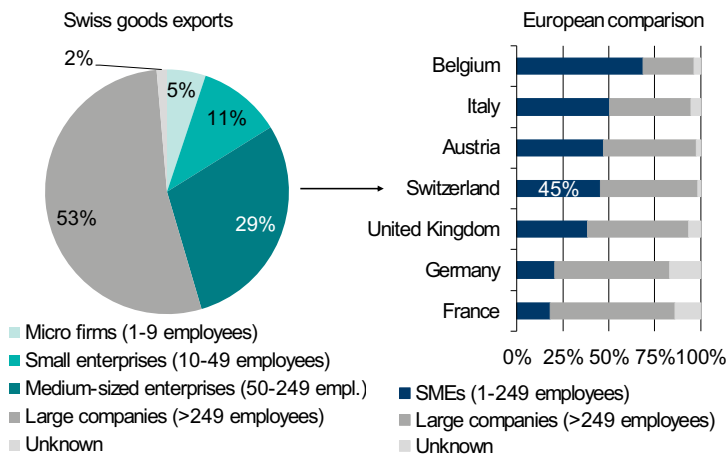
Source: Swiss Federal Customs Administration; SFSO; Eurostat; Credit Suisse.

Figure 3   Majority of exporting SMEs active in trade and sales

Proportion of exporting SMEs by sector, 2016
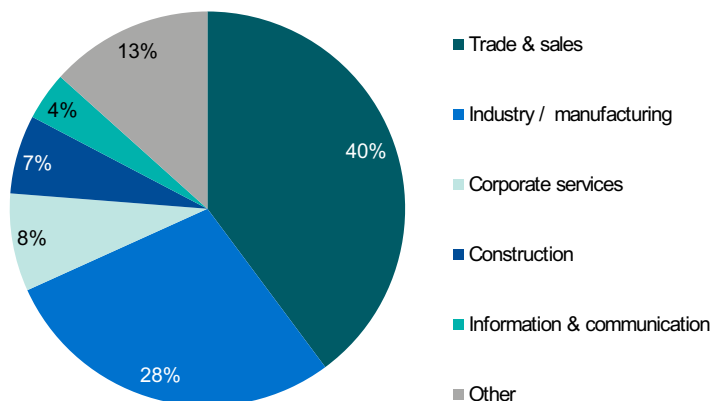
Figure 4   Wholesaling generates highest export sales

Exports of SMEs in CHF mn, five largest sectors, 2016

Figure 3 shows that the most frequent sector of origin of SME exports is trade and sales, which accounts for 40% of the 45,312 exporting Swiss SMEs. In part this is no doubt attributable to the distribution companies of major industrial businesses that can be assigned to the wholesale sector. In second place comes the manufacturing industry, with a 28% share. The major players here are the industrial businesses that are typically associated with significant export activity. The remaining sectors of the economy sell a significantly smaller proportion of their goods to foreign markets.

As Figure 4 shows, the wholesaling sector accounts for the largest proportion of goods exports in Swiss francs. However, manufacturing products can also be covered by this sector through distribution companies. Direct industrial exports appear in second and third place, encompassing electronics and precision instruments as well as mechanical engineering. The former also includes the watchmaking industry, which accounts for a significant proportion of exports for companies of all size categories. The manufacture of pharmaceutical products, which is the most prominent export category for large companies, is also one of the five key export pillars of the SME economy. In addition, various exports of the pharmaceutical industry can also be found under "other professional, scientific, and technical activities", insofar as these are not sold abroad as traditional end products.

2   Information on the survey and methodology

The following analysis is largely based on a survey that was conducted on behalf of Credit Suisse in March and April 2019, on an anonymous basis, by the independent polling organization amPuls. The survey sample is made up exclusively of SMEs that export, have planned on exporting in the past, or are considering doing so in the future. This is designed to ensure that respondent companies are also genuinely in a position to respond to questions on the theme of trade obstacles and protectionism. A total of 558 SMEs took part in the survey. In order to be able to draw conclusions about the various company size categories (micro firms, small enterprises and medium-sized enterprises), roughly the same number of companies were surveyed in each size category. A typical Swiss SME exporter is usually associated with an industrial business. The latter are also increasingly affected by the rise of protectionism. For that reason, some 80% of companies surveyed were industrial businesses, and just 20% service providers or construction firms. Small and medium-sized enterprises – which account for just 8.8% and 1.7%[3] of Swiss businesses, respectively –

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3   As of 2016 (source: SFSO).

were therefore deliberately disproportionately weighted in our survey – just like industrial businesses. In the following analyses, no weighting is undertaken that would adjust the survey sample to the overall Swiss SME landscape, as the focus lies on the sub-population of exporting SMEs.


3   The creeping rise of protectionism in global trade

Ever since Donald Trump's election as US President, the theme of protectionism has received intensified media coverage. What started in January 2018 with tariffs on washing machines and solar panels, which were quickly extended to steel and aluminum, acquired greater, geopolitical dimensions in March 2018 with the imposition of tariffs on US$50 billion of Chinese products. The tariffs are aimed at China, which is accused by the United States of engaging in unfair practices in trading, monetary policy, and the protection of intellectual property rights. However, other key trade partners of the United States – including the European Union and Switzerland – are also affected by these protectionist measures. Many of the trade partners involved, and particularly China itself, have responded immediately with retaliatory measures. Ever since, barely a day has passed without some new development in the so-called trade war. But can this increase in protectionist practices also be demonstrated with statistical data?

The Global Trade Alert (GTA) team tackles this issue from a macroeconomic perspective. It has been gathering data on the development of global trade ever since the financial crisis in 2009. In this context, protectionism is given a broader definition and includes any state measure that prioritizes domestic over foreign economic interests. An analysis of the GTA database shows that a large number of trade-distorting (i.e., protectionist) state measures have been implemented on an annual basis ever since 2009 (the dark red line in Figure 5). In other words, these measures far outweigh the trade-liberalizing measures that have been implemented over the same period (dark-green line). As the GTA database is also retrospectively updated with newly available information on trade policy decisions made in the past, there is a certain time lag effect at work, which means that more measures will subsequently be added to the earlier years. But even if the figures are corrected for this time lag effect, it is easy to see that trade-distorting interventions have had the upper hand since the financial crisis (pink and light green lines in Figure 5).

Figure 5   Increase in trade-distorting interventions in 2017 and 2018

Number of trade-liberalizing and trade-distorting state interventions worldwide

— Distorting interventions absolute   — Liberalizing interventions absolute
— Distorting corrected for timelag*   — Liberalizing corrected for timelag*
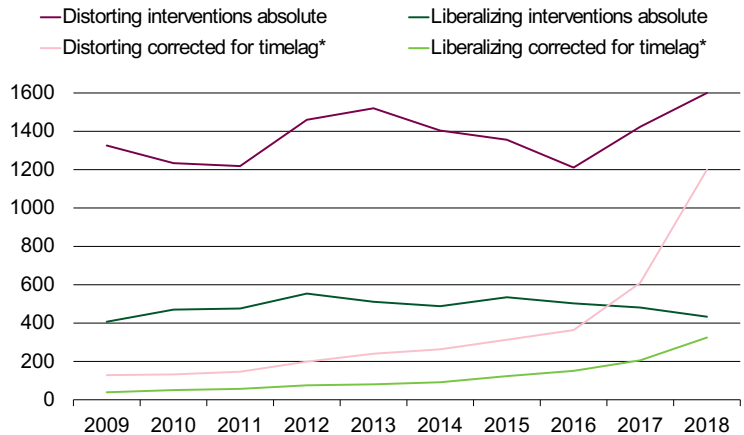
Source: Global Trade Alert (as of May 2019); Credit Suisse.
Note: *Correction: Number of measures divided by number of past years (see Evenett, 2019).

Figure 6   US, Canada, and Germany as main culprits

Net balance of trade-distorting and trade-liberalizing interventions
implemented by a state between 2009 and May 2019
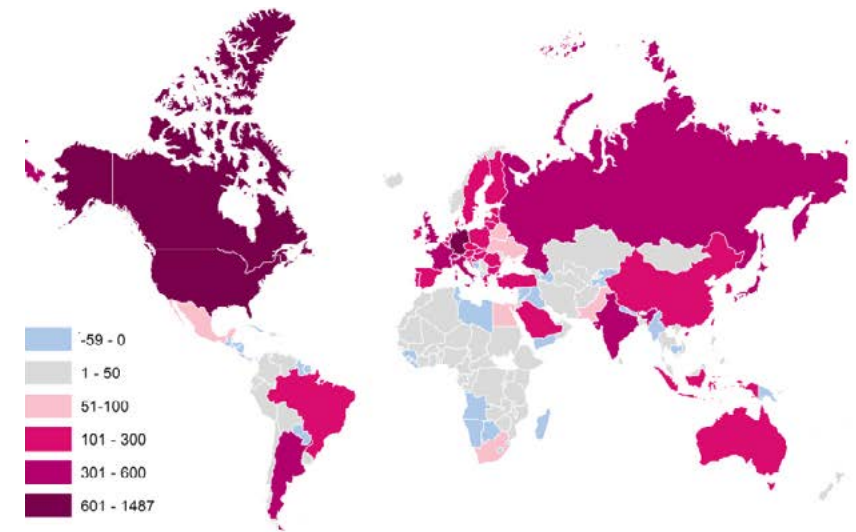
Source: Global Trade Alert (as of May 2019); Credit Suisse.
Note: No data available for non-colored countries.

Protectionism is more widespread than is often assumed, as is clear from Figure 6. In the figure, the darker the shading, the more trade-distorting – as opposed to trade-liberalizing – the measures introduced by a government since 2009. Although there appear to be three "main culprits" in the form of Canada, the United States, and Germany (with more than 600 net implemented measures in each case), the group of countries just behind should not be underestimated. This group comprises countries that have introduced between 301 and 600 net trade-distorting measures over the same period, and includes Russia, Japan, India, a significant swathe of the European Union, and Switzerland. It therefore appears that protectionism has increasingly become part of the economic policy toolkit around the world since the financial crisis.

When looking at this phenomenon from the perspective of those affected, it becomes clear that one country in particular has been a victim of protectionist measures. China, which is continually accused – and not just by the United States – of unfair trade practices, has been affected by trade-distorting interventions from other states nearly 3,500 times between 2009 and 2019. This makes it the most affected country of all (Figure 7). However, it is by no means the only one: the problem of being disadvantaged by protectionist actions extends across global value creation chains and many different countries. The above-mentioned "culprits", including Canada and the United States as well as a number of European countries, are also among the major victims of protectionism, along with China. An obvious explanation for this is the retaliatory measures to which the culprits mutually resort.

The multifaceted spectrum of instruments deployed to pursue protectionist aims is striking (see Figure 8). Between 2009 and 2019, measures such as customs tariffs were actually only the third most commonly deployed trade-restricting instrument. And as an additional factor, more tariffs were removed than were imposed over the period in question. The most commonly deployed instruments that are damaging to trade are a cluster of general subsidies, which account for more than 4,000 cases. These are followed in second place by export-supporting measures such as export subsidies, a tool used by countries to boost the export activity of domestic companies. We can conclude from this that the rise in protectionism is above all taking place in a concealed way, and therefore extends way beyond customs policy.

Figure 7   China has been the most frequent victim of protectionist interventions

Net balance of trade-distorting and trade-liberalizing interventions
implemented by a state between 2009 and May 2019

-8 - 0
1 - 500
501 - 1000
1001 - 2000
2001 - 3000
3001 - 3473
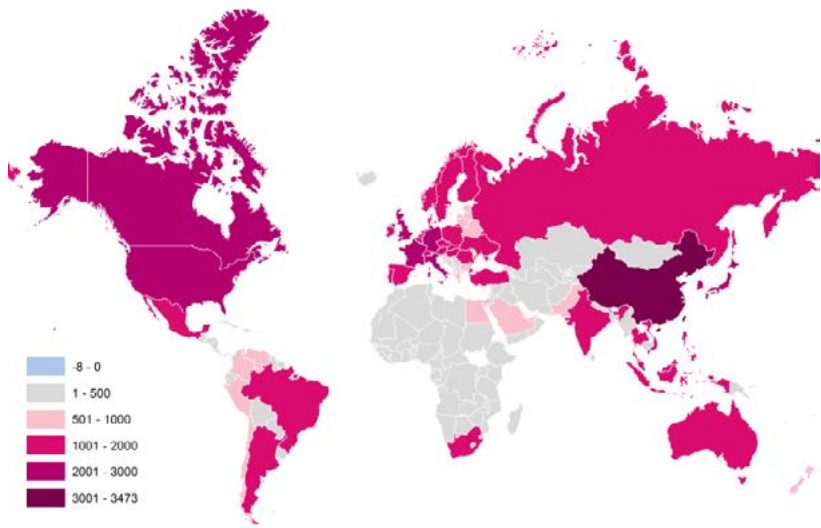
Source: Global Trade Alert (as of May 2019); Credit Suisse.
Note: No data available for non-colored countries.

Figure 8   Concealed protectionism via subsidies

Number of trade-liberalizing and trade-distorting state interventions worldwide,
by type of intervention, 2009 to May 2019
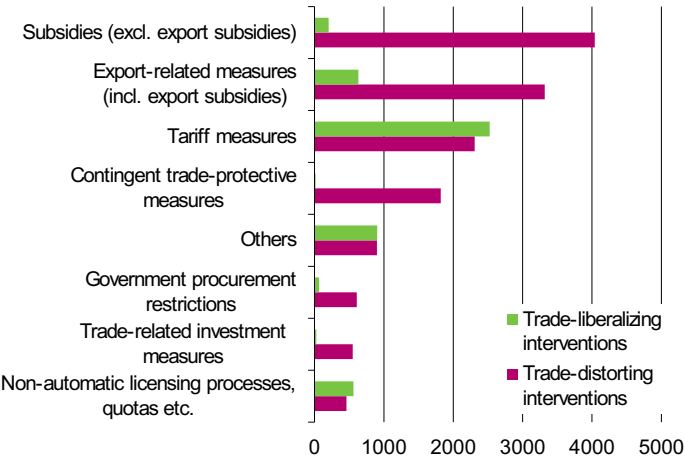
Source: Global Trade Alert (as of May 2019); Credit Suisse.

In order to obtain a conclusive picture of the latest state of protectionism, we need to take into account not just the absolute figures for trade-distorting measures, but also their repercussions for global trade. The GTA team estimates, on the basis of the information contained in the database, how great the proportion of exports (and imports) distorted by state interventions actually is. The gray columns in Figure 9 represent the results of this estimate. Both the scope and the extent of protectionist tendencies have clearly increased: since 2009, the proportion of total global exports affected by trade-distorting state interventions has risen from approximately 40% to more than 70%. The lines reflect the share of imports into a country that were affected by protectionist trade policy on the part of the corresponding state. The two countries that stand out here are China and the United States, with figures of well over 50%, but the trend toward a distortion of imports appears to be a growing factor in Switzerland's neighboring European countries too.

Although Swiss trade policy affects less than 1% of imports (by value) through trade-distorting measures (blue line in the Figure 9), the country has nonetheless implemented a significant number of trade-distorting measures itself since 2009 (see Figure 6). Of these interventions, 95% fall under the category of covert measures.[4] These include, among others, trade financing (e.g., the provision of export risk insurance for certain goods) and making it more difficult for foreign companies with non-Swiss employees to access the labor market. Figure 10 shows which countries have been affected by Swiss trade-distorting interventions, and how often. When viewed in terms of the net balance (trade-distorting measures minus trade-liberalizing measures), Switzerland's interventions have affected Germany 105 times, closely followed by Italy, which has been a victim of 100 net measures. Third and fourth places are occupied – despite free trade agreements – by China and Japan with 91 and 86 net Swiss interventions, respectively. This shows that even a small, open economy such as Switzerland, whose prosperity is heavily dependent upon trade, has itself been engaging in trade-distorting activity on a number of fronts since the financial crisis. In other words, it has been following the global trend of greater protectionism.

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4   Source: Global Trade Alert (www.globaltradealert.org), as of May 2019.

**Figure 9**   More than 70% of global exports are affected by protectionism

Estimated proportion of global exports/imports per country
affected by trade-distorting state interventions
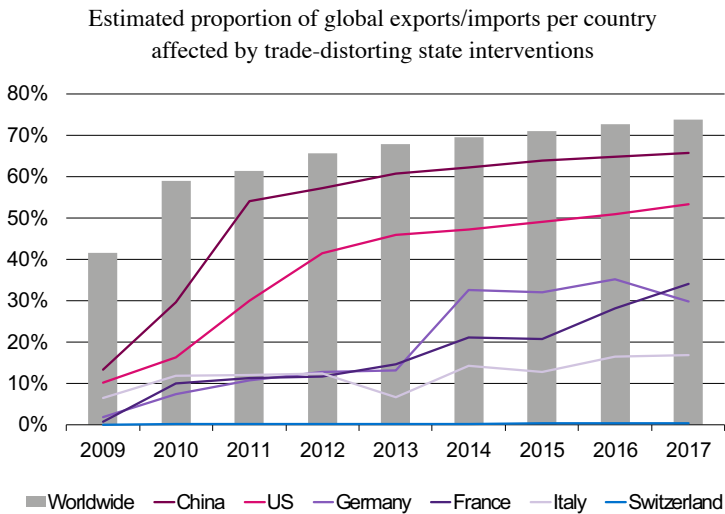
Source: Global Trade Alert (as of May 2019); Credit Suisse.

Figure 10   Switzerland's measures affect its neighbors and China

Net balance of trade-distorting and trade-liberalizing measures implemented
by Switzerland between 2009 and May 2019, by country
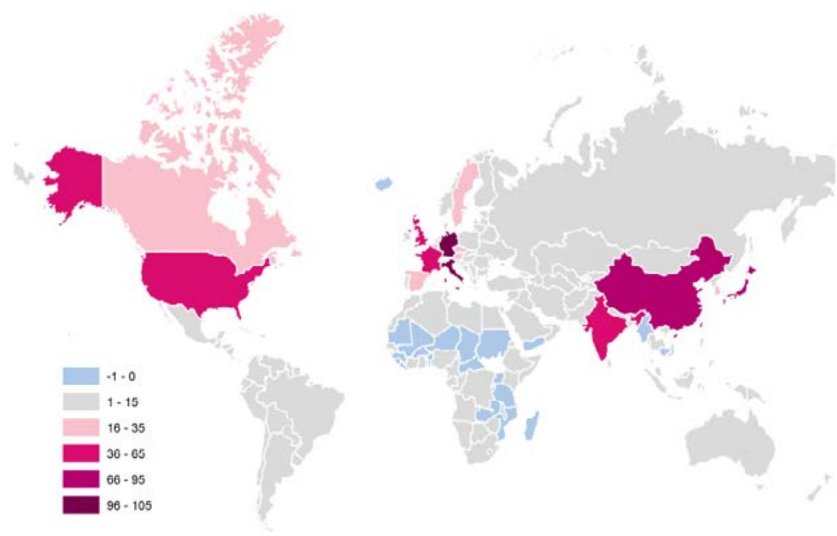
Source: Global Trade Alert (as of May 2019); Credit Suisse.
Note: No data available for non-colored countries.

Although protectionism has been rising steadily ever since the financial crisis, the number of trade-distorting measures increased dramatically between 2016 and 2018 when adjusted for the time lag effect (see Figure 5). It is probably no coincidence that this timeframe coincides with President Trump taking over the reins of trade policy in the United States. And indeed, the data suggest a high level of activity by this country in the implementation of trade-distorting measures. That said, it would be wrong to assign responsibility for the rise in protectionism over the last few years to just the United States and China. Numerous countries in Europe, as well as the likes of Russia, Japan, India, Australia, Argentina, and Brazil, also implemented an array of trade-distorting measures between 2016 and 2018. During this period too, it was not tariffs but import-restricting or export-promoting practices (such as various kinds of subsidies) that constituted the bulk of the measures implemented.

4 Perception of protectionism by Swiss SMEs: Slight increase in trade barriers for SMEs

Many Swiss SME exporters are integrated into international value creation chains. It is therefore only reasonable to assume that they too are affected by the repercussions of the global rise in protectionism. When questioned on this issue directly, although 21% of survey participants stated that trade barriers and customs hurdles are not a challenge – or only a very minor challenge – for them (see Figure 11), more than half considered this issue to be anywhere between somewhat and very significant. In other words, a majority of survey participants appear to be affected by this issue in one way or another. Only a small number of SMEs – just 6% – perceive trade barriers as a very major challenge, but more than a fifth (22%) still see them as a major challenge. Swiss SMEs are therefore affected to a significant extent, but do not appear to consider the difficulties posed by trade barriers as insurmountable (see the section on "Measures taken by SMEs to combat trade barriers").

In order to evaluate the extent to which Swiss SMEs have been affected by the intensification of protectionism in recent years, we asked our survey participants how they perceived trade obstacles five years ago. The results reveal only a slight shift toward an intensification of protectionism (see Figure 11). However, an accurate comparison over time is complicated by the fact that 17% of respondents did not feel able (or did not want) to give an appraisal of how they viewed the situation five years ago. When looking at the difference between assessments of the current situation and those of five years ago (see Figure 12), here too only a slight increase in trade barriers becomes apparent: around 23% of respondents consider the challenge to be greater at the moment than five years ago. Some 9%

take the opposite view. But half of all survey participants perceive no change compared to five years ago.

Given the increase in the number of protectionist measures in global trade (see the section on "The creeping rise of protectionism in global trade"), these results look fairly optimistic. Even though Swiss SMEs perceive a slight increase in trade barriers, a significant proportion appear to feel able to deal with this challenge. This standpoint is also confirmed by their assessments of the business situation in the export sphere: a significant proportion (58%) of surveyed SMEs considered their export situation to be good or even very good at the time of the survey (see Figure 13). Another near 30% described their current business situation in the export sphere as satisfactory. Only a small proportion (approximately 9%) considered their export situation to be critical. Although these results are pleasing in themselves, they should nonetheless be interpreted with caution. The averages for the various SME size categories show that medium-sized enterprises (purple circles) consider their export situation to be significantly better than small enterprises (pink triangles) and micro firms (blue squares) do. However, micro firms are much more frequently represented in the overall Swiss SME landscape than in our survey sample, so the average works out much lower.

The correlation between the business situation of companies in the export sphere and the perception of trade barriers as a challenge is not as clear as one might have thought. Even though a majority of surveyed SMEs assess their export situation as positive, and at the same time appear to have no difficulties with trade obstacles, it is frequently the case that an SME will assess its export situation as positive yet report some or great difficulty with trade obstacles (see Figure 14). On the one hand, this would suggest that while a substantial proportion of Swiss SME exporters perceive trade barriers as a challenge, they nonetheless appear to have a plan or strategy for overcoming these barriers (we explore these strategies in greater detail below). On the other hand, trade barriers tend to be structural factors, whereas the business situation of an SME in the export sphere will also vary according to the state of the economy.

**Figure 11**   Trade barriers are a (very) major challenge for 29%

Assessment of trade barriers and customs hurdles as a challenge
on a scale of 1 to 10, proportion of SMEs surveyed
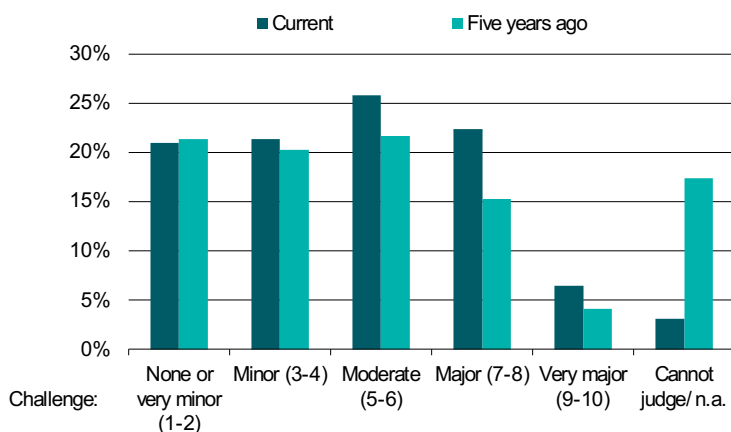
Source: Credit Suisse SME Survey 2019.

**Figure 12**   23% of SMEs see an increase in trade barriers

Difference in assessment of trade barriers and customs hurdles as a challenge,
now vs. five years ago, proportion of SMEs surveyed
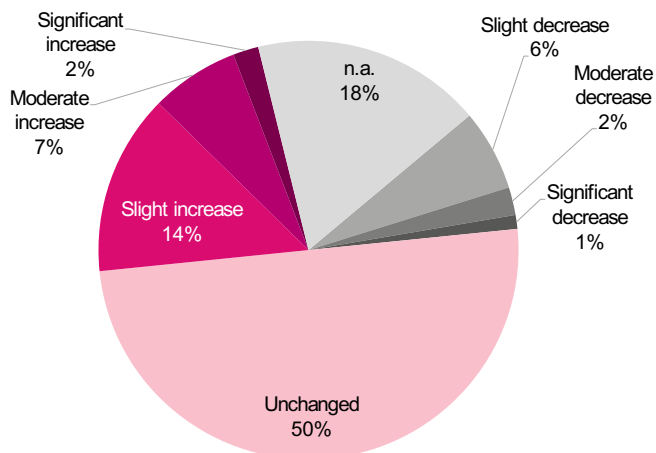
Source: Credit Suisse SME Survey 2019.

Figure 13   The business situation in the export sphere was predominantly good at the time of the survey

Assessment of latest business situation (at time of survey) in the export sphere by respondent SMEs, by size category
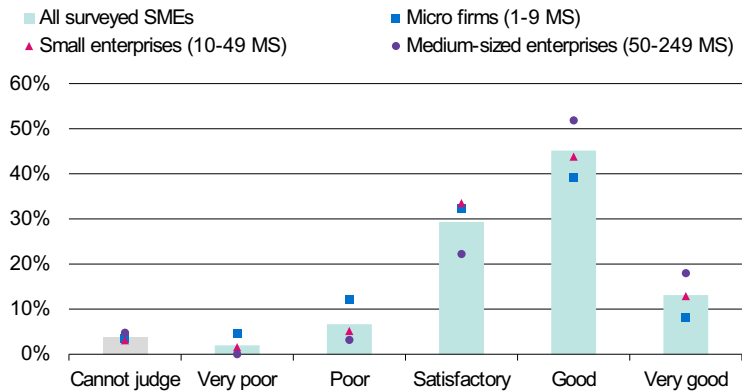
Source: Credit Suisse SME Survey 2019.

Figure 14   Protectionism does not always cloud the business situation

Assessment of business situation in the export sphere as well as trade barriers and customs hurdles as a challenge, number of surveyed companies
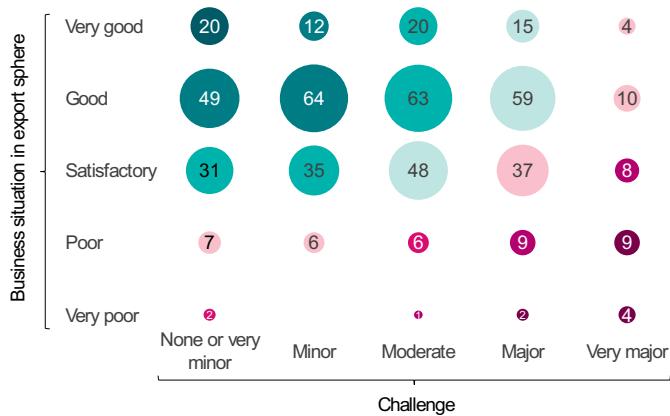
Source: Credit Suisse SME Survey 2019.

5   The export destinations of SMEs: Difficulties in exporting to Russia and Brazil

Where the number of implemented protectionist measures is concerned, there are significant differences between the various countries. The greatest "sinners" appear to be Germany and the United States, which also happen to be two of Switzerland's most important export markets. These countries have implemented the greatest number of trade-distorting measures since the financial crisis of 2009. Have Swiss SMEs also suffered as a result? In the next section, we analyze the degree to which Swiss SMEs perceive trade barriers in the United States and Germany, as well as elsewhere, and which other markets they consider to be relevant.

Figure 15 shows that the exports of the surveyed companies are heavily geared toward the European and US markets, with Germany the most significant export market for Swiss SMEs. Albeit quite some way behind, China and Southeast Asia follow. If it is assumed that planned future export activities will come to fruition, the United Kingdom can be expected to catch up with the United States as a significant export market for Swiss SMEs. An impressive proportion of respondents – almost 20% – export their goods to South and Central America. Furthermore, it is striking how many SMEs have considered exporting to China or Hong Kong in the past, but ultimately decided against such a step.

An indication of the extent to which trade barriers may have been responsible for this change of heart is supplied by Figure 16. The two pink-shaded areas of the bars in this chart represent the proportion of SMEs that were confronted by trade obstacles in the corresponding market. And indeed, 54% of the SMEs that have had past contact with China or Hong Kong in connection with export activity encountered moderate or even major trade obstacles. However, the situation faced by Swiss SMEs looking to export their goods to Russia or Brazil is even more challenging: more than 60% of SMEs experienced moderate or major trade obstacles here. Almost half of respondent companies have perceived moderate or major trade barriers in connection with the US export market. And the fact that this market is targeted so often and with such great effort, despite these impediments to trade, makes the huge relevance of it to SMEs all the more apparent. At the other end of the spectrum, Swiss SMEs exporting to Germany do not appear to be affected very often by the numerous protectionist measures implemented by the German government. For the surveyed SMEs, the United Kingdom has even fewer barriers to trade than Switzerland's other neighboring countries and the remainder of the European Union. Furthermore, a relatively high proportion of respondents indicate that they are planning to export their goods to the United Kingdom in the future. As things stand, therefore, it appears

that only a hard Brexit would jeopardize the United Kingdom's emergence as a flourishing export market for Swiss SMEs.

Figure 15   Germany is the most common export market for SMEs

Proportion of surveyed companies that export to the destination in question, planned to do so in the past, or plan to in the future
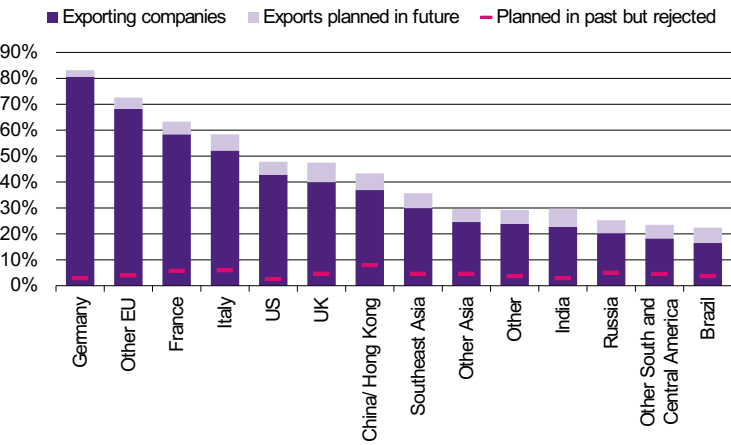
Source: Credit Suisse SME Survey 2019.

Figure 16   Trade barriers are most formidable in Brazil and Russia

Assessment of trade barriers of surveyed SMEs that export to the destination in question, planned to do so in the past, or plan to in the future
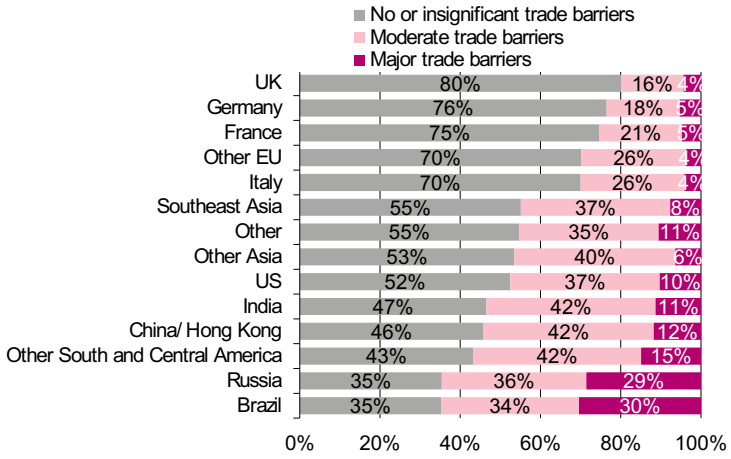
Source: Credit Suisse SME Survey 2019.

6   Swiss SME exporters and Switzerland's European policy

In our survey, we also asked SMEs about the latest European policy issues. Ninety-four percent of survey respondents that export their goods have at least one EU state as a sales market. Accordingly, unrestricted access to the European single market is of great importance (see Figure 17). The relevance of this issue in the construction, trade and sales, and services sectors (important or fairly important to 69% of SMEs) is rather lower than in manufacturing (78%), and the degree of importance tends to rise in keeping with the size of the company.

The relationship between Switzerland and the European Union is currently regulated by a network of arrangements consisting of some 20 key agreements – including the free trade agreement of 1972 and the various bilateral agreements – as well as more than 100 further agreements. With the institutional agreement currently being negotiated with the European Union (also known as the "framework agreement" or "framework contract"), the Federal Council is hoping "to consolidate the bilateral path/access to the EU single market, make it fit for the future, and facilitate its further development". Its area of application is restricted to the five existing market access agreements from the "Bilateral I" series (free movement of persons, overland transport, civil aviation, technical barriers to trade, and agriculture), as well as any future market access agreements (e.g., in the electricity sphere). In the absence of an institutional agreement, the European Union is not prepared to conclude any new market access agreements with Switzerland. Among other things, the framework agreement is supposed to introduce the principle of "dynamic" adaptation of bilateral market access agreements to new EU legislation. As a result, Swiss companies should get legal and planning certainty, as well as protection against discrimination in the EU market. In December 2018, the Federal Council opened the consultation process in respect of the negotiated draft agreement. On June 7, 2019 it announced that, following completion of the consultation, it would refrain from signing the agreement for the time being, and instead called for further clarifications from the European Union.

A total of 56% of the SMEs that took part in our survey support the draft agreement unveiled in December 2018, while 21% have expressed their opposition to it (see Figure 18). A striking finding in this context is the relatively high proportion of non-responses (just under a quarter). It would appear that many companies have yet to form a definitive opinion on the framework agreement. This is likely to be attributable to the complexity of the material, and the absence of clarity as to what would happen in the event of a final agreement not being reached.

Figure 17   Access to EU domestic market is important to surveyed SMEs

Proportion of responses to question of how important unrestricted access
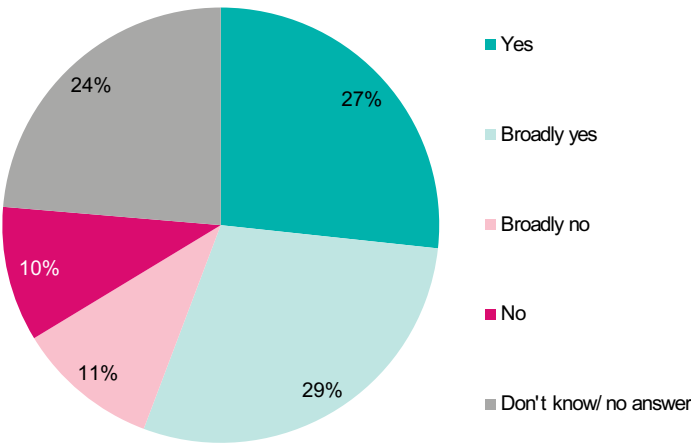to the European domestic market is for companies
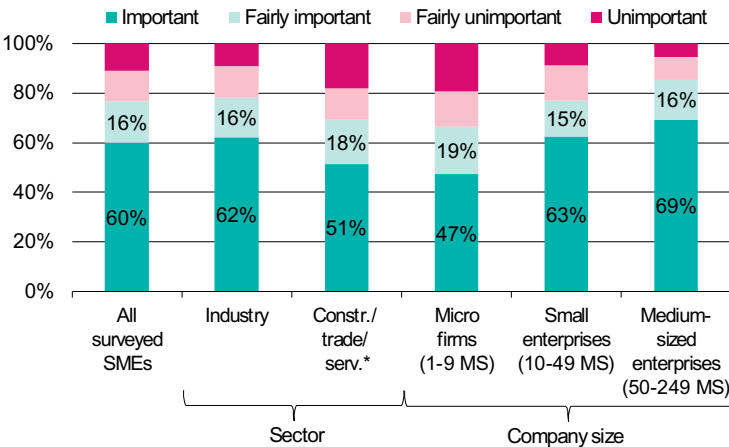
Source: Credit Suisse SME Survey 2019.
Note: *Construction/trade/services.

Figure 18   A narrow majority supports an institutional framework agreement
                       with the EU

Proportion of responses to question "Do you support the current draft
framework agreement between Switzerland and the EU?"

Source: Credit Suisse SME Survey 2019.

7   Specific obstacles to trade for Swiss SMEs: Tariffs a major obstacle for one in ten SME exporters

Protectionist measures go far beyond the imposition of tariffs, as the above-mentioned data from Global Trade Alert illustrates. It is above all through non-tariff measures that states seek to protect domestic providers against foreign competition. Among other things, these include laborious customs procedures as well as import bans and quotas for certain goods. However, state measures applied *beyond* the border rather than actually at it can also present trading obstacles for foreign companies. Examples of this would include country-specific product regulations and authorization procedures. To what extent are Swiss SME exporters disadvantaged by these different types of obstacles? And how heavily do protectionist measures weigh compared to other export hurdles? After all, in addition to state interventions, numerous other external and company-specific factors can have a restrictive impact on the export activity of a company. In order to find an answer to these questions, we asked survey participants for their assessment of an array of potentially export-restricting factors (see Figure 19). The selection was deliberately restricted to parameters that SMEs experience and perceive directly during the course of day-to-day business. Any concealed protectionist measures that may affect Swiss companies only indirectly, or that may not be fully perceived by these companies (for example, when a foreign state provides subsidies to its own exporters) were deliberately left out of this exercise.

Figure 19   National barriers to trade and other export-restricting factors for SMEs
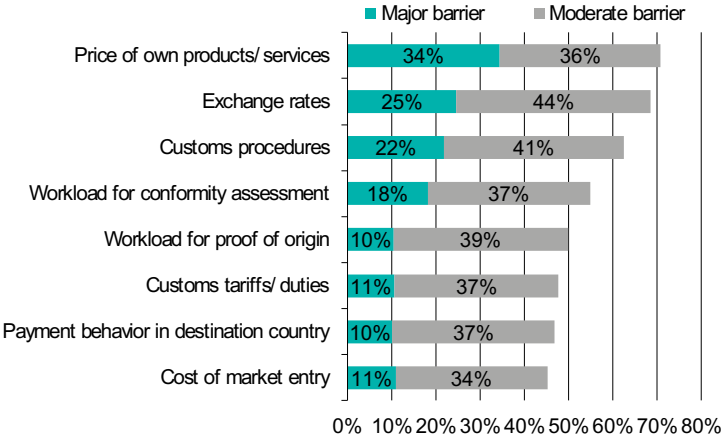
Schematic ranking of export-restricting factors queried in the survey
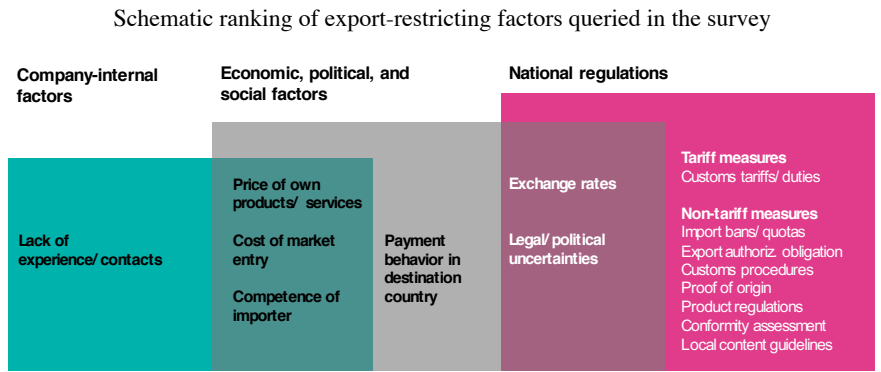
Source: Credit Suisse SME Survey 2019.

Figure 20   Commercial factors are the greatest obstacle to exports...

Proportion of answers to question of extent to which the specified factors restrict
(or have restricted) the export activity of the company

Source: Credit Suisse SME Survey 2019.

Figure 21   ... followed by non-tariff and tariff-based trade barriers

Proportion of answers to question of extent to which the specified factors restrict
(or have restricted) the export activity of the company
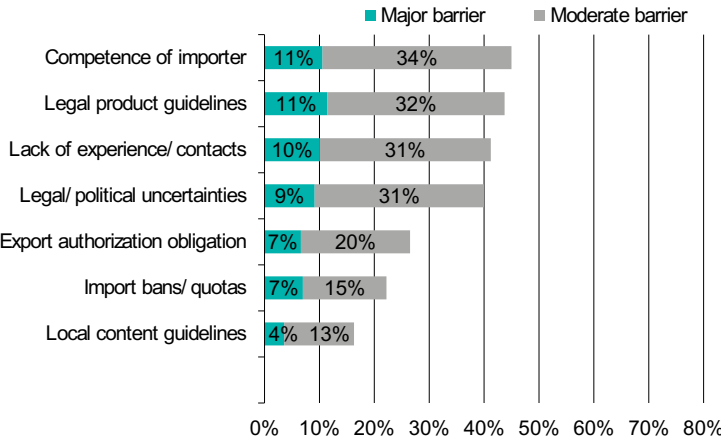
Source: Credit Suisse SME Survey 2019.

Tariff measures such as customs duties and levies represent an obstacle to trade for almost half (48%) of surveyed SMEs (see Figure 20). As many as 11% perceive tariffs as a major obstacle. This assessment is particularly pronounced in the watchmaking industry (customs duties a major obstacle for 26% of respondents), in the chemicals industry (23%), and in the furniture, wood, and glass industries (20%). Clearly above-average assessments are also evident among manufacturers of precision instruments and companies from the textile and clothing industries (18% in each case), as well as among food producers (17%).

For many SMEs, however, non-tariff measures are a more significant export hurdle than tariffs. For example, 41% of the companies surveyed consider customs procedures and the associated workload to be a moderate obstacle, with as many as 22% describing these as a major obstacle. Moreover, 55% of respondents also perceive the workload associated with conformity assessments to be export-restricting. Conformity assessments encompass activities such as audits, inspections, and certifications, in which the company checks whether a product or a service fulfills the regulations that apply in another market, and therefore whether exporting said product or service is viable. If a Swiss conformity assessment is not recognized by the destination country, this results in additional work/expense for the exporting company. Furthermore, half of SME exporters describe the workload associated with proving a product's origin to be a significant trading obstacle. If an exporting company wants to benefit from the tariff and duty exemptions agreed between Switzerland and another country in the context of a free trade agreement, it must prove that the goods in question do actually come from Switzerland. The conditions that a product must fulfill in respect of proof of Swiss origin vary, and depend on the free trade agreement in question. Moreover, for 44% of the SMEs surveyed, the different legal product regulations that apply in destination countries – for example, regarding health considerations or product labeling – likewise represent a trading obstacle. By contrast, aspects such as export approval obligations on the Swiss side (e.g., dual-use goods that can be used for both civil and military purposes), import bans and quotas in destination countries, and so-called "local content" guidelines (where a destination country prescribes a minimum quota for components from that country) are perceived as less onerous. These measures are perceived as a moderate or major obstacle by 27%, 22%, and 16% of respondents, respectively (see Figure 21).

Two commercial factors are of greater significance than both tariff-based and non-tariff measures, however. The first of these is the higher price level of the company's own products and services, which is described as a moderate obstacle to exports by 36% of respondents and as a major obstacle by 34% of respondents. As a second factor, 68% of exporting SMEs view exchange rate risk and the

level of the Swiss franc as an obstacle to doing business abroad, with a quarter of respondents viewing this aspect as a major obstacle. General prevailing uncertainties in destination countries are likewise perceived as an impediment: a total of 47% of respondents see their international business as being negatively influenced by payment behavior in certain export countries, while political and legal uncertainties in destination countries are perceived as an obstacle by 40% of exporters. In addition to the price of a company's own offering, the internal factors that can make it difficult for a company to export its goods include a lack of financial resources: 45% of the SME exporters surveyed describe the costs associated with entering a foreign market (such as an expansion of production capacity) as a hurdle.

As we will see in the next section, collaboration with local partners and the quality and reliability of these partners is a crucial success factor in the export business. For example, 45% of the companies that took part in our survey consider the expertise of their importer to be a moderate or major obstacle in certain destination countries. According to 41% of SME exporters, company management lacks the corresponding expertise and contacts abroad, which in turn weighs on that company's export activity.

8   Measures taken by SMEs to combat trade obstacles: Reliable partners and new free trade agreements desired

The previous sections showed that protectionism and trade barriers such as tariffs, administrative customs hurdles, and regulations have a clearly negative impact on the export activity of many Swiss SMEs. But how do these companies respond to these challenges, and what strategies have proved to be particularly helpful in this context? In order to explore these questions, we presented survey participants with a list of measures (see Box 1) and asked them which of these measures had proved helpful in overcoming trade obstacles.

In total, 87% of the companies surveyed found that at least one of measures in Box 1 has proved helpful to them in tackling trade obstacles. The most helpful measure of all was considered to be collaboration with external partners or existing networks locally, which was cited as a helpful strategy by 63% of companies (see Figure 22). The second most popular measure was to resort to existing free trade agreements with Switzerland, this being deemed helpful by 57% of SME exporters. Some way behind comes assistance from trade-promoting institutions and authorities (44%) and cooperation with certification and authorization bodies (39%). At the other end of the scale, by contrast, only around one SME in five found focusing on alternative products or on other national sales markets and the

adjustment of value creation chains to be successful strategies for tackling trade obstacles.

More detailed analysis of the results of the survey, however, would appear to show that the smaller the company, the greater the challenge in overcoming trade obstacles. Figure 23 illustrates the answers of survey participants on the issue of helpful strategies, broken down by size of respondent company. For micro firms, small, and medium-sized enterprises, the ranking of measures is almost the same, and indeed virtually identical in respect of the top five measures. However, it is striking that the proportion of companies that consider any given strategy helpful rises in line with company size. Whereas just under 70% of medium-sized enterprises view collaboration with external partners locally to be a helpful way of overcoming trade barriers, the equivalent proportion for micro firms with fewer than ten employees is just 56%. And whereas a total of 92% of surveyed medium-sized enterprises described at least one strategy as helpful, the equivalent figure for small enterprises and micro firms drops to just 86% and 82%, respectively.

Box 1   **Possible measures for dealing with trade obstacles**

- Exploitation of free trade agreements/exporting to countries with free trade agreements with Switzerland
- Focusing on the export of less-affected products or on countries with fewer trade obstacles
- Recruitment of specialists (e.g., export managers) and/or involvement of advisors (e.g. attorneys)
- Collaboration with external partners or existing local networks (e.g. distribution partners, clients, suppliers)
- Cooperating with certification and authorization bodies
- Assistance from institutions such as Switzerland Global Enterprise (S-GE), chambers of commerce, Swiss embassies, or foreign authorities that promote trade
- Adjustment of value creation chains (e.g., establishment of local branches or production sites)
- Adjustment of products and services

**Figure 22** What (and who) can help to overcome trade barriers?

Proportion of surveyed SMEs that found the specified measure
helpful in tackling trade barriers
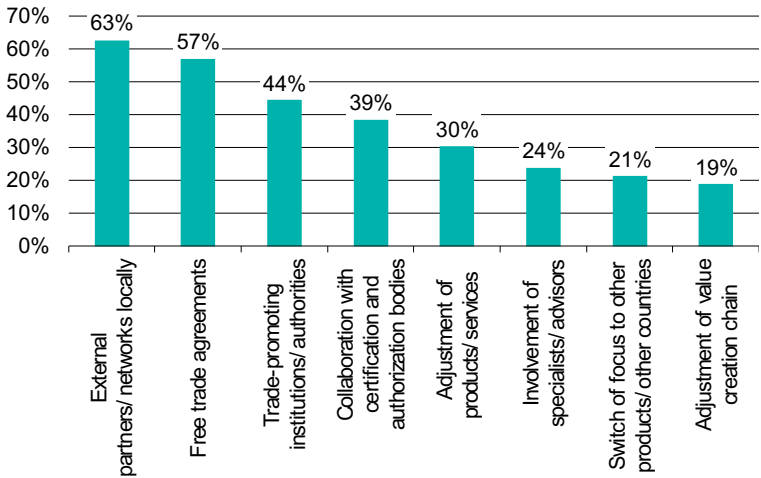
Source: Credit Suisse SME Survey 2019.

Figure 23 Smaller companies clearly have more difficulty in surmounting obstacles

Proportion of surveyed SMEs that found the specified measure
helpful in tackling trade barriers
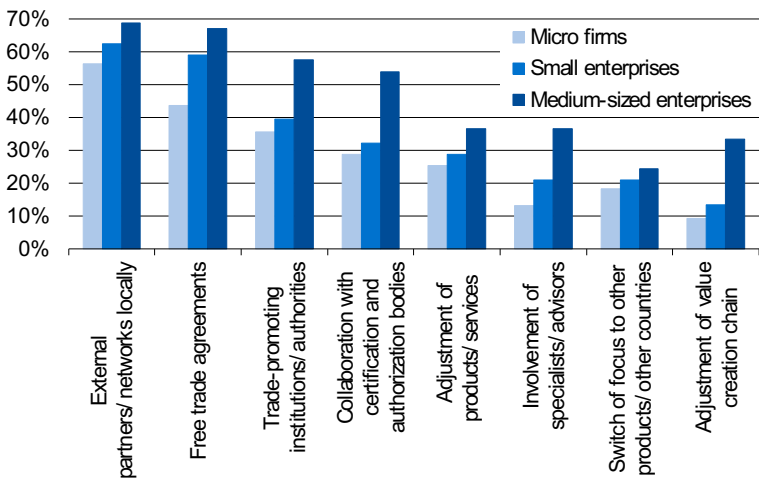
Source: Credit Suisse SME Survey 2019.

Figure 24   Exporting SMEs want free trade agreement with the US

Proportion of responses to question of whether a free trade agreement should be concluded
with the country in question; volume of Swiss exports to corresponding country as
proportion of all Swiss goods exports, 2018
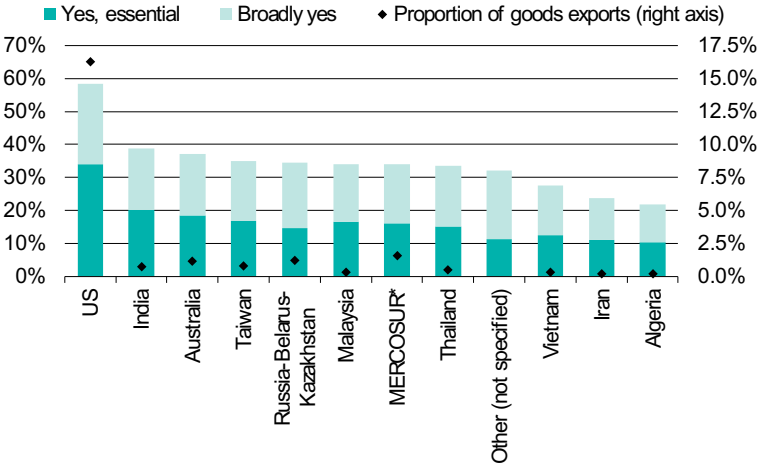
Source: Credit Suisse SME Survey 2019; Swiss Federal Customs Administration.
Note: *Argentina, Brazil, Paraguay, Uruguay

Figure 25   Switzerland should reduce its own trade barriers

Proportion of responses to question of what Switzerland should do with
its own tariffs and other trade barriers to foreign products and services
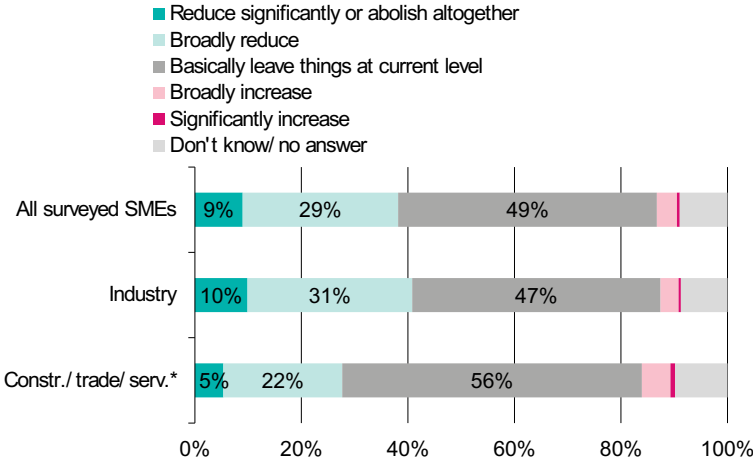
Source: Credit Suisse SME Survey 2019.
Note: *Construction/trade/services.

The onus to take action in connection with trade barriers is not just on companies themselves, but also on the state and the political establishment. Specifically, the aim of Switzerland's free trade policy is to enable Swiss companies to access foreign markets in the most stable way possible, and with the fewest possible obstacles and forms of discrimination. A key instrument here is the conclusion of free trade agreements. In addition to the EFTA Convention and the Free Trade Agreement of 1972 with the European Union, Switzerland currently has 30 free trade agreements in place with 40 trade partners.[5] The most eye-catching free trade agreement of all, and a source of major hope to Swiss exporters, is the agreement with China – the third-largest sales market for Swiss goods after the European Union and the United States – that entered into force in July 2014. It is clear from the above that the exploitation of free trade agreements is a very worthwhile exercise for SMEs, despite the workload involved for providing proof of origin. Accordingly, we were also keen to find out which other trade partners SME exporters believe Switzerland should seek free trade agreements with in the future.

The answer is fairly clear-cut: more than half of respondents (58%) would like to see Switzerland conclude a free trade agreement with the United States, and around a third consider such an agreement to be absolutely essential (see Figure 24). This finding is hardly surprising given that the United States is Switzerland's second most important trade partner after the EU. This was also the case in our SME survey of 2014, when a free trade agreement with China had been signed but had not yet entered into force (Credit Suisse 2014: 26 et seq.). Although Switzerland is not yet conducting any official negotiations on a free trade agreement with the United States, exploratory discussions between the two countries resumed in the fall of 2018.

Some way behind on the wish list of Swiss SME exporters is a free trade agreement with India, which Switzerland has been negotiating in an EFTA context ever since 2008. Some 20% of respondents would like to see such an agreement signed as a matter of urgency, with a further 19% broadly in favor. The corresponding approval rates for an agreement with Australia are 18% and 19%, respectively. No such negotiations are currently taking place with Australia. Rounding out the top five are Taiwan (no current negotiations) and the Russia–Belarus–Kazakhstan customs union (ongoing negotiations in context of EFTA since 2010).

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5   An overview of Switzerland's existing free trade agreements, as well as those currently being negotiated, can be found on the website of the State Secretariat for Economic Affairs (SECO) at https://www.seco.admin.ch (Foreign Trade & Economic Cooperation – Economic Relations – Free Trade Agreements).

Box 2   **SME exporters and trade barriers on the Swiss side**

- As established in the section "The creeping rise of protectionism in global trade", Switzerland is not just a victim of trade barriers, but also in some cases a culprit. However, measures taken supposedly with a view to protecting the domestic economy are not always positive for Swiss companies, as they have the effect of making imports of commodities and other input goods more costly.

- When asked what Switzerland should do in respect of its own tariffs and other trade barriers for foreign products and services, a relative majority of the SME exporters surveyed (49%) expressed themselves in favor of the status quo (see Figure 25). A further 9% want Switzerland to significantly reduce or even completely abolish its tariffs and trade barriers, while 29% believe they should be somewhat reduced. Just 4% and 1%, respectively, would like to see these tariffs and barriers somewhat or significantly increased.

- The forces of liberalization are more strongly represented in industry than in the construction, trade and sales, and services sectors, where more than half (56%) of respondent companies consider no change to be necessary. The strength of calls for Swiss trade barriers to be reduced is particularly pronounced in the chemicals sector, in the machinery, electrical engineering and metalworking industries (MEM industries), and in the food industry – all these sectors being reliant on the import of raw materials to an above-average degree. By contrast, SMEs from the plastics, furniture, wood, and glass industry sectors are disproportionately more likely to want such barriers raised even higher. Essentially these are sectors confronted by competitive pressures from foreign providers.

In summary, it may therefore be said that collaboration with local partners and free trade agreements are the most important strategies for SMEs in their struggle against trade barriers. Accordingly, the desire for additional free trade agreements – and above all with the United States – is strong. Such an agreement would provide many Swiss SMEs with a certain degree of planning certainty, particularly against a backdrop of trade disputes. The extent to which SMEs are aware of the importance of unrestricted trade is evident, on the one hand, from the survey results on the framework agreement with the EU: a majority is in favor of such an agreement being concluded. On the other hand, there is also a tendency for the companies surveyed to want to reduce domestic tariffs. This also confirms the importance of open markets to exporting Swiss SMEs.

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Swiss goods exports and the Sino-US trade war:
Conflicting transmission mechanisms

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This paper identifies various channels through which the Sino-US trade war and the January 2020 truce affect Swiss goods exports. As a third party to this bilateral trade war, Switzerland's goods exports were not targeted directly. Nevertheless, Swiss goods exports were implicated and evidence is presented that scales different transmission mechanisms. Given that leading central banks eased monetary policy partly on account of the macroeconomic consequences of the Sino-US trade war, a new dimension to the trade and monetary nexus has arisen. The consequences of this for the conduct of Swiss monetary policy are discussed.

1   Introduction

Switzerland's very high living standards depend in part on access to foreign markets. Whenever trade tensions resurface – as they frequently have since President Trump was inaugurated in January 2017 – concerns about the threat of protectionism to Swiss incomes and employment are raised. The purpose of this paper is to examine the different ways in which the Sino-US trade war, which has seen tariffs imposed on hundreds of billions of US dollars of bilateral trade, affects Swiss goods exports.

While no definitive assessment can be given at this time – after all, the Sino-US trade war is not over, notwithstanding the truce reached in January 2020 – the principal mechanisms for transmission from changes in American and Chinese trade policy to Swiss goods exports can still be identified. Not only could knowledge of these mechanisms facilitate better specified empirical analysis, but it can inform policymakers who face potentially conflicting evidence on the effect of this bilateral trade war on the Swiss economy.

That the Sino-US trade war has fortunately not spread to other countries raises various analytical questions. How can a bilateral trade war affect the exports of third parties? Must all of the knock-on effects on third parties' exports be

negative?[2] How might those third parties respond? And could some responses by a third party increase the risk that its exports are targeted with trade restrictions by one of the protagonists in the bilateral trade war? And more generally, to what extent, if at all, is the effect of a bilateral trade war on a third party different from that generated by a global trade war that results in many nations simultaneously implementing trade distortions?

Many analyses of trade wars employ economic models (e.g., GROSSMAN and HELPMAN 1995) that assume only two countries exist, so in these approaches a "global" trade war is a bilateral trade war. However, in a world of many nations, the potential for trade deflection and trade diversion need to be considered as well. In this respect, the arguments presented in this paper complement the analysis of NICITA, OLARREAGA, SILVA, and SOLLEDER (2020) of a global breakdown in trade cooperation, which can also be found in this issue of *Aussenwirtschaft*.

That the US administration may take more actions against Chinese and other national exports also raises the question as to whether Swiss goods exports could be at greater risk in the future. Moreover, in May and November 2019 the Trump administration postponed decisions on whether the importation of cars and car parts represent a threat to US national security. Since German car exports to the United States are sizeable, and given that Swiss firms supply German car manufacturers with parts and components, further restrictive *America First* trade policies imply potential for supply chain-related disruption.[3]

Another risk examined in this paper concerns the potential targeting of Swiss goods exports by the United States. Two grounds for doing so are discussed here and the likelihood of US action assessed. In one of these two discussions, the decisions of the Swiss National Bank will play an important role, thereby shedding light on the link between a bilateral trade war and monetary policy intervention by protagonists and by third parties.

To the extent that other countries' central banks ease their monetary policies, there may be implications for the value of the Swiss franc against the US dollar and the euro, which in turn could have knock-on effects for Swiss goods exports.

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2   There may also be effects on the operations, exports, and profitability of third-party foreign direct investments in the protagonists' economies in a bilateral trade war. This observation is particularly pertinent given the large size of the markets in both China and the United States and the use by many Swiss multinational corporations of the Chinese economy as a production base for exporting goods to the United States.

3   Note here that the presence of supply chains magnifies the risk of adverse knock-on effects from US action. This is contrary to the argument, often made before the Sino-US trade war, that international supply chains increase the economic costs of protectionism and, so the argument went, that the presence of such supply chains is likely to reduce the likelihood of trade distortions being implemented in the first place. From the statements of several US officials, it appears that disrupting US supply chains that operate in China is an objective of the Trump administration, turning the argument just mentioned on its head.

This effect is in addition to any adverse implications for investment spending from greater risk premia created by the Sino-US trade war.

The remainder of this paper is organised as follows. In order to put the knock-on effects of the Sino-US trade war for Swiss goods exports in perspective, the section documents the exposure of Swiss exports to the build-up of crisis-era trade distortions. Particular attention is given to the build-up in Switzerland's ten largest export sectors and ten largest export destinations. The policies underlying these foreign trade distortions are also distinguished.

Section 3 of the paper discusses what is known about the potential consequences for Swiss goods exports of the Sino-US trade war as it has unfolded to date. Section 4 explains and assesses the commercial significance of the different transmission mechanisms at work. Concluding remarks are presented in Section 5.

2   Establishing a benchmark: The pre-trade war build-up of crisis-era trade distortions affecting Swiss goods exports

"Compared to what?" is a standard refrain in economics research. If one is to examine the scale of Swiss exports potentially affected by the Sino-US trade war, then it makes sense to benchmark this against other trade policy measures taken against Swiss exports by foreign governments. Since the topic being examined here is bilateral trade wars, which involve the deliberate targeting of a trading partner's exports, then a natural place to start is to identify any cases of foreign targeting of Swiss commerce.

To the best of my knowledge, since the turn of the millennium Switzerland has not been involved in any fully blown trade wars. Still, that does not end the matter as there have been instances where foreign governments have taken action that affect only Swiss commercial interests. Presumably, a necessary condition for a foreign government "targeting" Swiss commercial interests is that only one trading partner be harmed by the act in question. Consulting the Global Trade Alert database reveals that, since November 2008, there have been seven foreign government acts that harmed or could have harmed only Swiss commercial interests (see Table 1).[4]

Table 1: Only seven measures taken by trading partners solely target or affect Swiss commercial interests

Trading partner and description of measure	Intervention type	Announcement date	Implementation date	HS code for goods affected (where relevant)
Pakistan: Initiation and subsequent termination of antidumping investigation on imports of pegylated interferon alpha-2A from Switzerland	Anti-dumping	01/10/2011		300220
Bolivia: Nationalization of the tin and zinc mine Colquiri	FDI: Treatment and operations, nes	20/06/2012	20/06/2012	
Bolivia: Nationalization of Antimony Smelter Plant	FDI: Treatment and operations, nes	01/05/2010	01/05/2010	
Bolivia: The government nationalizes Swiss mineral trader Glencore	FDI: Treatment and operations, nes	02/05/2010	02/05/2010	
Brazil: BNDES backs transportation in Rio with a loan of 1.6 billion reals	Local operations	23/07/2013	23/07/2013	860110
France: Investment support for Valeco Group	Public procurement localization	31/01/2017	31/01/2017	271600
Saudi Arabia: SIDF provides loan worth 116 million SAR for transparent packaging film plant in Dammam	State loan	31/12/2012	31/12/2012	392043

Of these seven acts, only six were implemented (one of the acts that could have implicated Swiss goods exports involved an anti-dumping investigation where import duties were ultimately not imposed). In total, just three of the 1,352 foreign state acts that harmed Swiss commercial interests since November 2008 and that remain in force in early 2020 affect only Swiss goods exports. In February 2020, these three foreign state acts implicated 0.3% of Swiss goods exports – a tiny proportion.[5]

That almost all of the foreign state acts affecting Swiss commercial interests did not single out Swiss commercial interests implies that, when Switzerland's trading partners have tried to tilt the commercial playing field in favor of domestic firms, they have done so in an across-the-board manner. An example is if a foreign government provides a subsidy to local firms that compete against imports from Switzerland and other countries. Such a subsidy does not target Swiss exports, but harms those exports all the same.

In contrast to the share of Swiss good exports singled out by foreign governments, the share of such exports affected by other harmful foreign measures is substantial (see Figure 1). Starting from November 2008, when the G20 Leaders first declared they would eschew protectionism, and taking account when foreign harmful acts come into force and lapse, Figure 1 reports the share of Swiss goods exports affected by harmful foreign acts during the years 2009-2019 that are still in force.

Such is the build-up of foreign trade distortions affecting Swiss commercial interests that three-quarters of Swiss exports now face one or more trade distortions when competing in foreign markets. To put this share in perspective, it is worth recalling that for the last year trade data are available, Swiss goods exports to the United States amounted to 13% of total Swiss exports.

Figure 1 contains other findings worth bearing in mind as one "scales" the significance of the Sino-US trade war for Swiss goods exports. The first is that the trade distortion that Swiss exports are most exposed to is not import restrictions, but policies to boost exports, including export subsidies, tax incentives for exporters, as well as measures to finance exports.[6] One particular disservice of the Sino-US bilateral trade war, which has involved the imposition of principally tariffs (as well as some export bans), is that it has reinforced the impression that taxes on imports are the biggest distortion to world trade. In fact, as the evidence for Switzerland and other countries has shown,[7] measures to expand exports affect by far the largest share of world trade.

Figure 1:   Three-quarters of Swiss goods now compete against trade distortions in foreign markets

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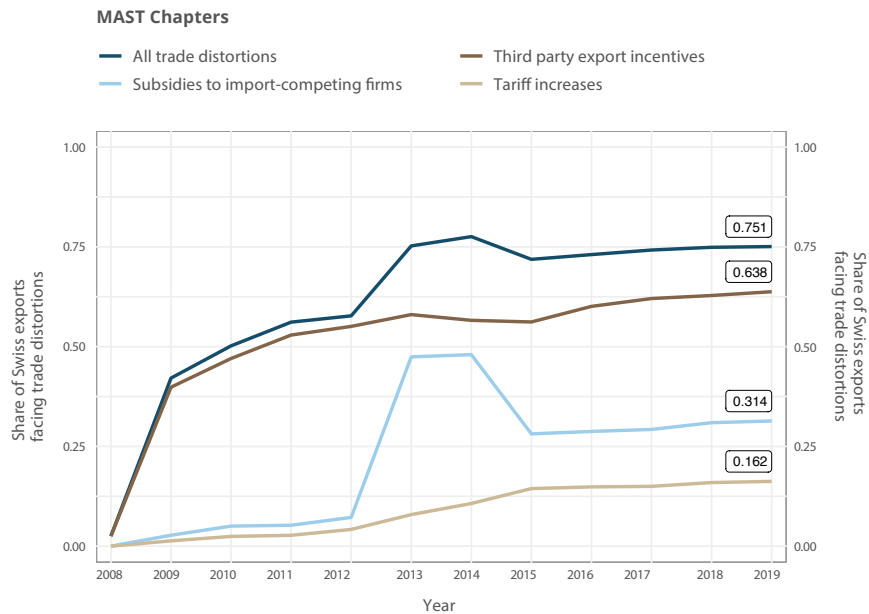
The second finding of interest in Figure 1 is that since 2012 subsidies to import-competing firms affect many more Swiss exports than face import tariff increases. Switzerland's proximity to the European Union, whose state aid regime is not as restrictive as advertised, accounts in part for the growing exposure of Swiss goods exports to competition from bailed-out or subsidized import-competing firms. That is not to imply that subsidies elsewhere have not grown; they have in China and the United States, for example.

Figure 1 refers to the goods exports from Switzerland to other countries and not to the exports from the subsidiaries of Swiss multinationals located in other countries. It is telling that before the Sino-US trade war began, over 15% of Swiss goods exports faced tariff increases implemented since November 2008 and that were still in effect in 2017. Even so, the share of those Swiss exports singled out by foreign governments is a tiny fraction of the share of Swiss goods exports that pay higher import taxes than ten years ago.

Aggregate export statistics are one measure, but governments and business representatives often prefer breakdowns across significant export destinations and commercial sectors. Figures 2-5 present data on the exposure of Swiss exports to foreign trade distortions for the top ten export destinations (as measured by value of exports in US dollars for the last year for which global trade data is available,

2018) and for the top ten exporting sectors (where sectors are defined using the three-digit level of disaggregation of the United Nations CPC classification).

A heat map is deployed in Figure 2 to present evidence on the shares of Swiss exports facing one or more import distortions implemented by the top ten export destinations in question and still in effect at the end of 2019. Again, the source of data on harmful policy intervention is the Global Trade Alert.

The green cells in Figure 2 imply that no major Swiss export sector faced adverse competitive conditions in Hong Kong at the end of 2019 on account of the importing government's policies. Swiss watches, clocks, and jewelry are exposed to few import distortions in the top ten export destinations for Swiss goods.

In contrast, Swiss exporters of organic chemicals face pervasive import distortions in these foreign markets. Overall, the color coding in Figure 2 highlights the heterogeneity in exposure to foreign import distortions in force at this time. This heterogeneity cautions against drawing general conclusions for all Swiss sectors and trading partners.

Figure 3 differs from Figure 2 by highlighting the Swiss export exposure in sectors and markets where three or more import distortions were in force at the end of 2019 as opposed to one or more distortions being in effect. Figure 3 indicates where Swiss firms must compete against multiple import distortions, which presumably is more challenging and a greater threat to profitability. It is revealing that the non-green cells in Figure 3 relate principally to Swiss exports of organic chemicals and pharmaceuticals to the European Union and to the United States. China has imposed multiple trade distortions affecting sizeable shares of Swiss exports of instruments, special-purpose machinery (principally medical equipment and research equipment), and machine tools.

As noted earlier, however, policies that distort incoming imports are not the only threat to Swiss market shares in overseas markets. State incentives given by foreign governments to their exporters threaten just under two-thirds of aggregate Swiss goods exports (recall Figure 1). These export incentives enable recipient firms to lower their prices and gain market share at the expense of rivals from other countries, including rivals from Switzerland. Alternatively put, when facing rivals that are benefiting from export-related state largesse, Swiss firms determined to maintain their market shares in affected foreign markets must shave their prices and accept lower profit margins, thereby reducing the incentive to export in the first place.

When it comes to the top ten Swiss export sectors and destinations, the large number of red and purple cells in Figure 4 indicates how prevalent state largesse to exporters was in 2019. Exposure of Swiss exports to rivals that can benefit

from such third-party export incentives in the French, German, Japanese, and US markets is particularly high.

Once again, it is possible to identify those top Swiss export destinations and sectors which are affected by three or more foreign export incentives in force at the end of 2019. Figure 5 shows where Swiss export exposure is more frequently exposed to such foreign incentives. Interestingly, the Swiss watches and clocks sector competes against relatively few foreign export incentives. This is the case to a lesser degree for jewelry and for Swiss food exports. Overall, there are not many green cells in Figure 5, indicating that Swiss exporters facing subsidized rivals competing in third markets is largely the norm. Again, large shares of Swiss exports to Germany, Japan, the United Kingdom, and the United States have to compete against foreign rivals that are eligible for export incentives.

Drawing the material in this section together, it is evident that large shares of Swiss goods exports faced an uphill struggle competing against pervasive trade distortions before the Sino-US trade war began in 2018. The most far-reaching of those trade distortions were export incentives offered by foreign governments, affecting Swiss exports multiple times of the total value of Swiss bilateral exports to China or to the United States. For sure, there is variation across top export destinations and across major export sectors, which cautions against over-generalization. Nevertheless, with this information it is now possible to meaningfully benchmark the fall-out of the Sino-US trade war for Swiss goods exports.
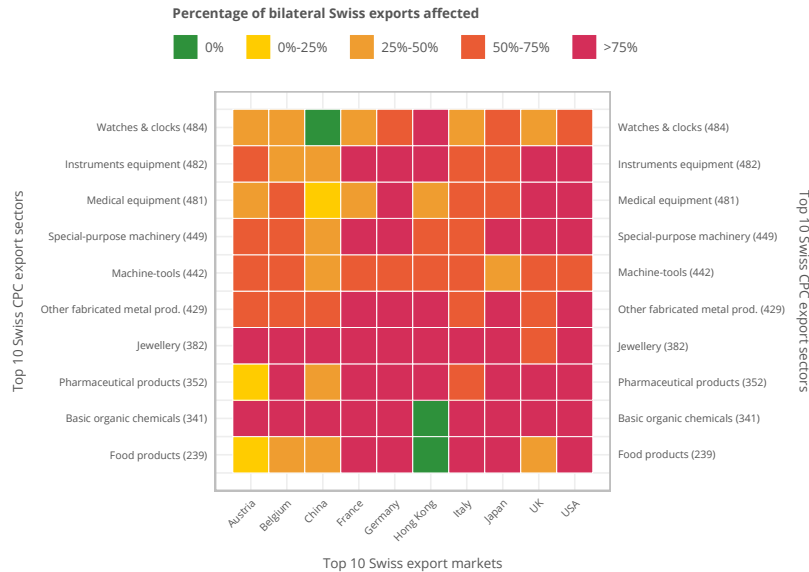
Figure 2: Pharmaceuticals and basic chemicals exports faced considerable crisis-era trade distortions


Figure 3: Pharmaceutical and basic chemical exports faced multiple trade distortions affecting large shares of sectoral trade

Figure 4:   Very few of Switzerland's top ten exports escaped the reach of other nations' export incentives

Figure 5:   Large shares of Swiss exports of medical equipment, pharmaceuticals, and basic organic chemicals compete against multiple foreign export incentives
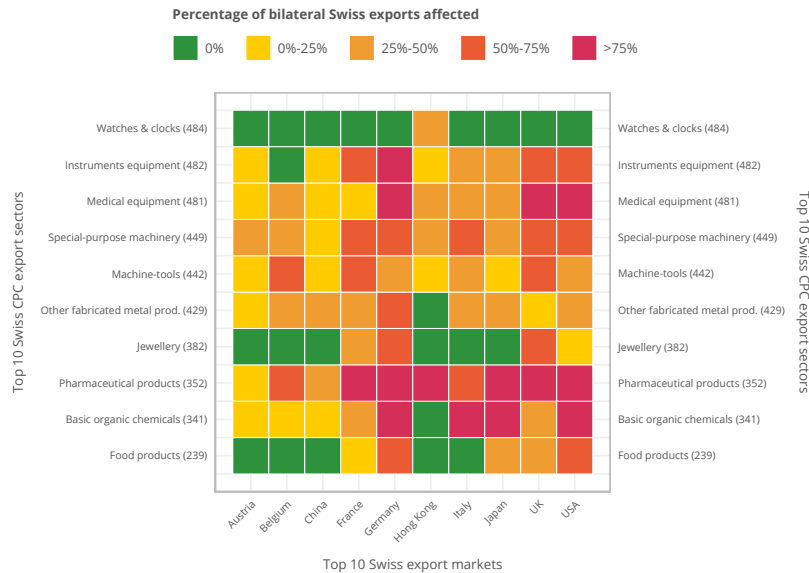
3   Swiss goods exports and the Sino-US trade war

To what extent, if at all, were goods exports from Switzerland exposed to the consequences of the United States and China raising import tariffs on each other's goods from 2018 on?[8] This question is interesting as the third-party effects of this trade war have not been much analyzed, even though some of the key mechanisms involved have been known for some time.[9]

This is not to argue that simulations of the current Sino-US trade war have ignored third parties; rather that the mechanisms at work are often not articulated. One goal of this section is to spell out these mechanisms so as to facilitate a comprehensive assessment of the impact on Swiss goods exports.

Recall that China runs a substantial goods trade surplus with the United States. Recall also that, following the journalistic practice of estimating the total value of exports affected by trade war-related tariff hikes in 2018 by using trade flow data from 2017, the United States imposed tariff increases on \$278 billion of Chinese exports in 2018. For its part, China imposed tariff increases on \$109 billion of US exports in 2018. As a result, over half of the total value of bilateral trade between these two trading behemoths were affected by tariff rate increases (often of the order of 25%) during 2018 alone.

3.1   Trade diversion

The first mechanism that could be triggered by tariff increases on this scale is trade diversion. Rather than switch expenditures from Chinese suppliers to American suppliers, for example, a US buyer could start buying from a foreign supplier outside of China. The extent to which Switzerland could benefit from such trade diversion depends critically on whether the products Switzerland exports to the United States overlap with those for which the US government has imposed hefty tariffs on imports from China. Using publicly available information[10] on the products the United States has raised tariffs on from China since the start of the Sino-US trade war, and detailed information on Swiss exports to the United States, it is possible to calculate the share of Swiss exports to the United States that of products where Chinese exporters face higher tariffs. The same computation can be made for Swiss exports of products where American suppliers face higher tariffs in China on account of the bilateral trade war.

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8   For a timeline of the Sino-US trade war, see Bown and Kolb (2019) (latest version available at https://www. piie.com/blogs/trade-investment-policy-watch/trump-trade-war-china-date-guide). For other accounts of the development of that trade war and attempts to scale the war, see Evenett and Fritz (2018).

9   Such as the notion that imports into a nation raising tariffs on a particular source country will be shifted, or deflected, to another foreign source country.

10   Again, such information can be found at the six-digit level of disaggregation for products in the Global Trade Alert database.

In 2017, the year before the Sino-US trade war broke out,[11] Switzerland exported $16.1 billion US dollars of goods to the United States that involved products where Chinese exports were hit with tariffs. This implies that just under a third of Swiss exports to the United States could have benefited from trade diversion. This does not mean that a third of Swiss exporters actually benefited from trade diversion; rather it is a measure of the opportunity. Put differently, because of the limited overlap between the products shipped by China and Switzerland to the United States, over two-thirds of Swiss exports to the United States could not benefit from trade diversion.

With respect to Swiss exports to China, a total of $7.7 billion were in products for which the Chinese government had imposed additional tariffs on US exporters during the trade war. Reflecting the lower total value of Swiss exports to China, this $7.7 billion total represents 81% of Swiss exports to China. Due to a much larger degree of overlap between goods exported by Switzerland and those exported by the United States, proportionally speaking, the opportunities for gains for Swiss exporters from trade diversion are greater in China.

Compared to the global total for Swiss exports reported by the United Nations in 2017 of approximately $299 billion, the total potential exports benefiting from trade diversion in the Chinese or American markets amounts to $23.8 billion, or less than 8% of the total.

3.2   Business confidence and capital expenditures

The second mechanism at work is the impact of the Sino-US trade war on business confidence and investment outlays by firms. In a submission to G20 finance ministers in June 2018, the IMF highlighted the potential adverse impact for global GDP if risk premia rose on account of falling business confidence driven by the trade war (IMF, 2018). In July 2019 the Governor of the Bank of England, Mr. Mark Carney, argued:

> "*The more hostile and uncertain trading environment is coinciding with sharp slowdowns in global trade, manufacturing, industrial production and capital goods orders. As a consequence, the quality of global growth has deteriorated. Across the G7, the growth rate of business investment has almost halved since its peak in late 2017, leaving the global expansion more reliant on consumer spending and reducing its resilience.*"[12]

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11   And also conveniently the year before the trade war began and, therefore, immune to concerns about endogeneity. That is, that the reported total was affected by the trade war (in particular by the very trade diversion that is being scaled here.)

12   "Trade wars could shipwreck global economy, warns Mark Carney," *The Guardian*, 2 July 2019.

Falling capital expenditures, a share of which is spent on foreign-produced capital goods, is a potential threat to Swiss exports. In 2017 just under $47 billion of capital goods were exported around the globe by Switzerland,[13] representing one-sixth of Swiss global exports of goods in 2017. To put that share in perspective, it is more than double the share of Swiss exports that could gain from trade diversion. This does not mean that the net effect on Swiss exports of trade diversion and chilled business investment must be negative, but it sets the bar pretty high for Switzerland to be a net beneficiary in trade balance terms from the Sino-US trade war.

Despite investment outlays being, typically, a volatile component of national GDP, it turns out that since 2000 the coefficient of variation of Swiss exports of capital goods is less than that for exports of other, non-capital goods. Moreover, the percentage of Swiss goods exports accounted for by capital goods has fallen from over 27% to 16.7% now. It would seem that the changing structure of Swiss goods exports has made the Swiss current account less vulnerable to a trade war-induced global investment slowdown.

3.3 Preference erosion in the Chinese market

A third mechanism at work relates to the reaction of the protagonists to third parties since the onset of the trade war. Here it is important to note that Switzerland has a free trade agreement with China but not with the United States. On 30 September 2018, China announced it was cutting its most-favored nation (MFN) tariffs on over 1,500 goods.[14] That followed a tariff cut on 1,498 goods by China on 31 May 2018.[15] These two tariff cuts covered 5.4% and 3.6% of Chinese imports, respectively (calculated following the journalistic norm of using 2017 import data). The United States has not engaged in tariff cutting on a similar scale, so in what follows the focus is on the two Chinese tariff cuts.

The significance of these Chinese tariff cuts on an MFN basis is that they reduce the tariff preference margin enjoyed by Swiss exporters under the Sino-Swiss free trade agreement. While China did not extend these tariff cuts to the United States, an unfortunate side effect is that every nation with a free trade agreement with China faces potential export losses as a result of China's decision to reduce tariffs on these two occasions. The extent of the Swiss goods exports at risk will, again, depend on the extent of the product overlap.

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13 The list of HS codes classified as capital goods is available upon request.

14 For details, including the official announcement of this tariff reduction, see https://www.globaltradealert.org/state-act/31995

15 For details, including the official announcement of this tariff reduction, see https://www.globaltradealert.org/state-act/30770

In sum, further doubt is cast then on the proposition that the Sino-US trade war benefited Swiss goods exporters overall. Any gains from trade diversion must be weighed against two countervailing factors: reduced capital goods exports and preference erosion to the Sino-Swiss free trade agreement. That is not to say that no individual firm, sector, or sub-sector gained.

4   Potential trade war-related risks to Swiss goods exports

As was evident in the aftermath of the singing of the "Phase One" economic agreement between China and the United States[16] in January 2020, the Sino-US trade war is far from being completely settled. If anything, a truce has been called and hostilities may resume. Moreover, the Trump administration is still pursuing other aspects of its *America First* trade policy. This has included investigating whether car and car parts imports are a threat to US national security as well as criticizing the trade practices of nations with large bilateral trade surpluses with the United States.

The goal in this section is to look forward and assess potential risks to Swiss goods exports in the months and years ahead. The focus, perhaps inevitability, is on actions taken by the United States. That said, as was made clear in Section 2 of this paper, the trend towards trade distortions is broad-based and unlikely to be confined to the United States.

4.1   Trade diversion as a result of the Phase One agreement

The first contingency arises from the implementation of the Sino-US truce agreed in January 2020. Chapter 6 of the Economic Agreement commits China to buying an extra $200 billion of goods and services from US companies during 2020 and 2021. To the extent that Chinese purchases are diverted away from existing Swiss suppliers, then the potential for export losses exist.

Although China has committed in principle to purchasing minimum amounts – in US dollars – of manufacturing goods, agricultural products, energy products, and services, an annex to Chapter 6 specifying exactly how much China will purchase under this accord has not been made public. This makes it difficult to estimate, even approximately, the likely threat to Switzerland's exporters. Still, the risk is there. Worse, the mere expectation that non-US-based suppliers will be squeezed may deter Chinese buyers from placing orders. To the extent that any

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16   The text of that agreement can be found at https://ustr.gov/sites/default/files/files/agreements/phase%20one%20 agreement/Economic_And_Trade_Agreement_Between_The_United_States_And_China_Text.pdf.

Swiss goods supplier can transfer production to a US-based plant, then this threat can be mitigated. (Of course, not every Swiss producer has that option.)

4.2 US tariffs on cars and car parts

The second contingency is that President Trump decides to impose tariffs on imported cars and car parts. His administration put off taking a decision on this matter in November 2019 and a further delay cannot be ruled out. Still, the uncertainty of whether such tariffs will be imposed lingers.

According to the last year of available data before the Sino-US trade war (2017), direct Swiss exports of car parts to the United States amounted to $99 million. Before concluding that Swiss exports at risk are trivial, however, it is worth recalling that automobiles are a sector where cross-border supply chains are prevalent. Should German exports of finished cars to the United States face high tariffs, then there could be adverse knock-on effects for suppliers of car parts from Switzerland. That Swiss exports of car parts amount to $1.78 billion worldwide means potential knock-on effects cannot be ruled out.

Even so, there are substantial differences across the export destinations for Swiss car parts in terms of the shares of cars exported to the United States. For example, 19% of the Mexican car exports are shipped to the United States, but Mexico buys less than $44 million of car parts from Switzerland. Germany, on the other hand, buys just under $1 billion of car parts from Switzerland, but exports only 2.2% of its cars to the United States. If one were to weigh the Swiss exports of car parts to a destination market by that destination market's share of car exports to the United States, and also add in the direct Swiss shipments of car parts to the United States, then the Swiss car parts exports at risk amounts to $135 million. This is equivalent to 7.5% of the total value of Swiss car parts exports and to 0.05% of annual Swiss goods exports worldwide.

On the face of it, then, the threat of US tariffs on imported cars is unlikely to have a large effect on the Swiss economy. However, the above calculations do not take account of any retaliation by the major car exporters (such as the European Union, Japan, and possibly Mexico). Should such retaliation trigger counter-retaliation by the United States, then further trade diversion effects and adverse consequences for business investment cannot be ruled out. Again, the former may benefit Switzerland's good exports and the latter may harm them.

4.3   Bilateral trade surplus with the United States

The third contingency is that the Trump administration begins systematically targeting those nations with large bilateral trade surpluses with the United States. To date, the Trump administration has shown little interest in service trade balances, so the focus in what follows is on goods trade. Taking the European Union as a single customs territory, the ten territories with the largest goods trade surpluses were identified along with Switzerland and are ranked in Figure 6 according to increasing trade surplus.

Figure 6:   There are few possible targets for US criticism ahead of Switzerland

Ten trading partners have larger trade surpluses with
the United States than Switzerland

Surplus in goods trade with the United States in 2017, USD billion

On the face of it, the fact that ten jurisdictions are ahead of Switzerland as far as goods trade surpluses are concerned may provide some comfort. But it is worth noting that the United States has already engaged the top five trade surplus trading partners in negotiations for new trade arrangements. Moreover, India and Korea (ranked seventh and eighth, respectively) are facing pressure from the United States to lower trade barriers. This leaves only three nations – Vietnam, Thailand, and Malaysia – that have larger goods trade surpluses with the United States than Switzerland. The margin of comfort may be smaller than many realize, not least if the Trump administration is re-elected and continues its *America First* policies in a second term. Proposals for negotiating (but not necessarily concluding) a free trade agreement between Switzerland and the United States may be an attractive stalling tactic, if nothing else.

4.4   "Currency manipulation"

A fourth contingency that may arise is, on the face of it, exchange rate-related but has monetary policy roots. The classic concern is that currency depreciation – or as the US government prefers to call it, "currency manipulation" – is used to confer a commercial advantage on a nation's exporters, to the detriment of other nations' exporters.

As Figure 7 shows, since the start of this century there has been a sustained appreciation of the Swiss franc against the US dollar and more than a three-fold rise in the nominal value of Swiss exports to the United States. For various reasons, the Swiss National Bank has at different times during the past decade taken steps to limit the appreciation of the Swiss franc, arguably when the currency's popularity was enhanced by its relative safe-haven status. This may be enough to attract the ire of Washington, although it must be said that, to date, the US Treasury has rarely gone beyond "naming and shaming" "currency manipulators."

Figure 7:   Measures to stop the appreciation of the Swiss franc could become a source of trade friction with the United States
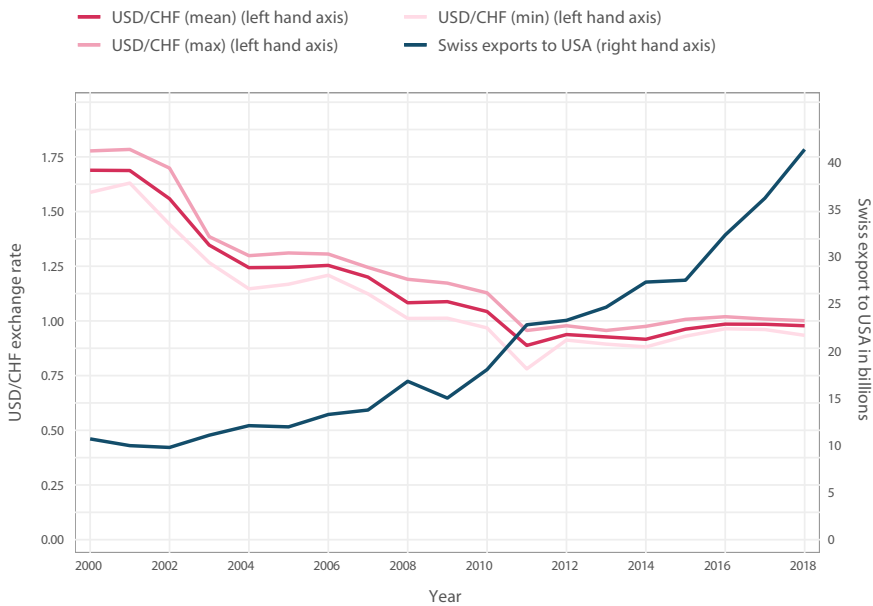
Events in 2019 have added a further twist to the currency–protectionism nexus. This year, trade tensions – in particular, the "on again, off again" Sino-US trade war – are regarded by many commentators and officials as contributing to falling business confidence, which has translated into expectations of lower investment and rates of economic growth. So pronounced has this tendency been that the US Federal Reserve Board and the European Central Bank have both signaled that they are likely to ease monetary policy. President Trump has applauded the former and condemned the latter as an attempt to soften the euro and to gain commercial advantage.

A renewed bout of monetary easing by leading trading partners and trade tension-related market nerves triggered by a breakdown of the Sino-US truce of January 2020, or by the imposition of tariffs on cars and car parts, could trigger a move by investors into "harder" or "haven" currencies. The question at that stage would be whether to acquiesce to the resulting appreciation of the Swiss franc against the euro and the dollar, or whether to intervene to prevent the franc's rise. The latter choice is risky as it could attract the ire of Washington.

An important implication of the foregoing discussion is that, once protectionism begins to have unacceptable implications for macroeconomic performance (principally through the investment channel rather than the trade channel), central bankers have been ready to consider easing monetary policy. So instead of viewing exchange rate depreciation as a substitute for protectionism – a view EICHENGREEN and IRWIN (2010) argued fits data for the era between the two World Wars – or currency depreciation as a form of beggar-thy-neighbor activity, so far this year protectionism has been a cause of monetary easing. Our understanding of the monetary policy–exchange rate–protectionism nexus needs to be updated in light of developments during 2019.

5   Concluding remarks

Analysts will no doubt study the Sino-US trade war of 2018 and 2019, and the associated *America First* policies of the Trump administration, for years to come. Policymakers, corporate decision-makers, government officials, and journalists do not have that luxury; they have to assess the consequences here and now. The goal of this paper has been to draw out the implications for Swiss goods exports of what, to date, has largely been a bilateral trade war between China and the United States. Bilateral trade wars differ from global breakdowns in trade cooperation, and some of the transmission mechanisms discussed in this paper reflect that.

Drawing upon available trade flow and trade barrier data, and taking account of existing institutional trading arrangements such as the Sino-Swiss free trade agreement, it is possible to scale and assess the likely consequences for Swiss goods exports of the Sino-US trade war. Trade diversion gains for Swiss exporters are likely to have been offset by lost capital goods exports and some preference erosion in the Chinese market.

According to calculations presented here, the total value of Swiss capital goods exports is double that of the exports that may gain from the trade diversion. Moreover, the Swiss goods exports implicated by the Sino-US trade war are a fraction of the Swiss goods exports that face the thousands of trade distortions that had quietly built up before this bilateral trade war began. Keeping matters in perspective is important during fraught times.

Although it is inevitably more speculative, the forward-looking discussion in the previous section of this paper identifies additional threats to Swiss goods exports. Last year (2019) saw trade tensions and protectionism trigger monetary easing by the central banks of the euro area and US. This easing has put the Swiss National Bank on the spot. Swiss central bankers may be damned if they do (as engaging also in monetary easing to limit the appreciation of the Swiss franc may attract criticism from President Trump) and damned if they don't (as any Swiss franc appreciation could harm Swiss export interests.)

This is not an enviable choice and clearly an assessment of the likelihood of American criticism translating into action against Swiss goods exports would be required. Not every US presidential tweet destroys export opportunities. Of course, some may argue that trade policy considerations should not influence the determination of Swiss monetary policy. But evidently the impact of the value of the Swiss franc on the current account has been a consideration in the past, in which case consistency may require a broader assessment of the Swiss national interest.

The focus of this paper has been on the bilateral nature of the Sino-US trade war. Little consideration was given here to the possibility of this bilateral trade war spreading and drawing in more trading nations that ultimately raise tariffs on imports. One mechanism by which this could come about is if Chinese exports originally destined for the US market are deflected to other nations' markets. The resulting import surges, and harm to import-competing interests, may induce a protectionist response.

Analyses to date of the degree of such trade deflection are inconclusive and hardly point to a massive re-direction of Chinese exports. It is the case that certain industry groups have used the specter of trade deflection to encourage policymakers to take precautionary protectionist measures, and not just against

imports from China. This tendency needs to be carefully monitored, for Swiss goods exports could end up becoming collateral damage in measures to limit trade deflection from the US market.

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Imad A. Moosa / Nisreen Moosa
Eliminating the IMF. An Analysis of the debate to keep, reform or abolish the Fund.
Palgrave Macmillan, Cham, Switzerland 2019, 178 S., 109,99 $.

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Als Makroökonom sollte man sich vom vorliegenden Buch auf Anhieb angesprochen fühlen, zumal trotz globaler Finanz- und Wirtschaftskrise eine grundlegende Reform der internationalen Währungsordnung immer noch in weiter Ferne zu liegen scheint. Dabei stellt der Internationale Währungsfonds (IWF), der 1945 im Zuge der legendären Bretton-Woods-Konferenz (1. - 22. Juli 1944) gegründet worden ist, einer der – gestern sowie heute – wohl bedeutendsten Wirtschaftsakteure dar. Als internationale Wirtschafts- und Währungsinstitution mag sie für die einen, eine missglückte Chance (z. B. eine wirkliche „Zentralbank der Zentralbanken" etabliert zu haben) repräsentieren, während sie für die anderen aufgrund ihrer Governance eher eine Festung westlicher Interessenvertretung sein mag. Weitere noch mögen im IWF eine nicht mehr erforderliche (oder, wennschon, radikal anzupassende) internationale Institution erkennen. Fazit ist, dass die Washingtoner Zwillingsinstitution der Weltbank seit eh und je polarisiert und Gegenstand wissenschaftlicher sowie gesellschaftlicher Debatte ist. Die Autoren Moosa tun daher gut daran, die Frage nach der Erforderlichkeit des Fortbestehens des IWF in aller Klarheit – selbst im Titel! – zu stellen.

Dementsprechend interessant gestaltet sich dieses kurze, aber aufgrund seiner üppigen Literaturhinweise intensive Schriftwerk, das in Kapitel 1 beim „Nennwert" (*face value* im Wortlaut der Publikation selbst) ansetzt und den Leser in die Zielvorgaben, wichtigsten Eigenschaften und Besonderheiten des IWF einweiht. Dabei wird die Behandlung historischer Aspekte (die heutzutage selbst in volkswirtschaftswissenschaftlichen Studiengängen zu kurz kommen) nicht gescheut, die (explizite, aber auch implizite) Anpassung des IWF-Mandats über die verschiedenen Jahrzehnte dessen Bestehens geschildert und hinterfragt. Kapitel 2 befasst sich hingegen mit dem sogenannten *Washington Consensus*, jenem Wirtschaftsprogramm, dem sich IWF und Weltbank lange Zeit hingegeben haben. Der „Konsens von Washington" soll vor allem nationalen Mitgliedsregierungen Anweisungen liefern, wie Wirtschaftsstabilität und -wachstum erfolgreich gefördert werden können. Dabei sind Reduzierung von Staatsausgaben, Liberalisierung allgemeinen Handels durch Aufhebung von Handelsbeschränkungen bzw. -kontrollen, Regulierung von Märkten sowie Preisen und Privatisierung von öffentlichen Unternehmen einige der wohl

wichtigsten Charakteristika. Dass gerade solche Reformansätze häufig wegen ihres ausgeprägten *One-size-fits-all*-Ansatzes in der Kritik gestanden haben, wird lobenswert genug nicht verschwiegen oder kleingeredet. Je mehr sich die Autoren in die Thematisierung der Vor- und Nachteile der heutigen IWF-Gestaltung hineinwagen, umso deutlicher werden potenzielle Bau- oder Handlungsfehler angesprochen. Kapitel 3 setzt sich daher mit Konditionalitäten auseinander, die Mitgliedsländer in Notsituationen Schritt für Schritt zu erfüllen haben, um IWF-Darlehen weiterhin beziehen zu dürfen. Derartige Auflagen, die bereits 1952 an die Vergabe von Krediten geknüpft und 1969 in die IWF-Satzung eingeführt worden sind, haben häufig im kritischen Fokus von Wissenschaft und Gesellschaft gestanden, zumal verschuldete Nationen sie zumeist systematisch und binnen relativ kurzer Zeit zu erfüllen haben. Dass sich aus ihnen negative Wirtschaftsschocks ergeben können, wird von den Autoren auch mit vielerlei konkreten Beispielen aus der jüngeren Wirtschaftsgeschichte bewiesen. Derartige Konditionalitäten, die makroökonomischer (vgl. die Gesamtwirtschaft betreffend), handelspolitischer (vgl. sich auf Handelshemmnisse beziehend), strukturpolitischer (vgl. auf Deregulierung und Liberalisierung zurückgehend) sowie mikroökonomischer (vgl. einzelne Projekte betreffend) Natur sein können, werden bis ins Detail vertieft. Dass die zumeist nicht auf einzelne Mitgliedsnationen (sowie je nach wirtschaftlicher Ausgangslage) zugeschnittenen IWF-Lösungsansätze sogar zu Aufruhren in manchen Entwicklungsländern der achtziger und neunziger Jahren des vergangenen Jahrhunderts geführt haben, wird in Kapitel 4 deutlich gemacht. Der IWF (zumindest in einigen historischen Lagen) als „sozialer Unruhestifter" (*the IMF as an instigator of riots and civil unrest* im Wortlaut der Publikation selbst) ist schon besonders zu lesen. Zur Bekräftigung dieser These wird in Kapitel 5 auf die sozialen Auswirkungen stringenter IWF-Darlehensbedingungen (und die oft einhergehenden Sozialleistungskürzungen) eingegangen. Kapitel 6 setzt sich daher mit der grundsätzlich provokativen Frage auseinander, ob der IWF zu behalten, reformieren oder gar aufzulösen wäre. Was durchaus diskutabel klingen mag, ist es angesichts mancher wiederkehrenden Fragen – man denke dabei auch an die Rufe nach einer ausgewogeneren Governance, die bislang eine solch strategische Währungsinstitution stillschweigend in europäischer (während die Weltbank in amerikanischer) Hand vorsieht – auf den zweiten Blick wohl weniger.

Obwohl das vorliegende Buch im Vergleich zu ähnlich spezifischen Publikationen keine hohe Anzahl an Abbildungen (und noch weniger an Tabellen) aufweist, sind die verschiedenen Standpunkte der Debatte vielleicht noch nie so deutlich formuliert und in einem führenden Verlag veröffentlicht worden. Ohne zu viel verraten zu wollen, sind die Autoren sich einig, dass die Empirie zur Genüge bewiesen hat, dass der IWF häufig mehr Schaden als Gutes angerichtet hat. Als Makroökonom, der sich selbst intensiv mit dem internationalen Währungssystem

auseinandergesetzt hat, befinde ich eher, dass nicht der IWF, sondern die mit ihm einhergehenden verpassten Chancen das eigentliche Problem sind. Nichtgestaltung der Sonderziehungsrechte als internationaler Geldeinheit anstelle eines *funny money* und des IWF als „Zentralbank der Zentralbanken" (die für die Endgültigkeit des heutigen internationalen Zahlungskreislaufs (*payment finality* nach BIZ-Definition) sorgen sollte) sind nach Meinung des Schreibenden dieser Buchbesprechung wohl eher das Hauptthema. Die hier rezensierte Publikation ist aber schon deswegen relevant, weil sie Kritik am heutigen Währungsestablishment (trotz Wiedererlangung einer führenden Rolle aufgrund der globalen Finanz- und Wirtschaftskrise) nicht scheut, mangelt dennoch vielleicht an einem letzten Kapitel, das anderen Reformalternativen das Auge zwinkern sollte. Anders formuliert: was wäre, wenn der IWF einen „Schritt in die Vergangenheit machen" und mehr nach dem Keynes-Plan (der fürwahr schon aufgrund der fehlenden Zuteilung einer führenden Rolle für Leitwährungen wie den US-Dollar für eine bessere Ausgangslage in Sachen Währungsgerechtigkeit gesorgt hätte) umgestaltet werden würde? Es trifft natürlich zu, dass der britische Gestaltungsvorschlag fixe (aber anpassbare) Wechselkurse vorsah und sie trotz Durchsetzung des amerikanischen Plans letztendlich bis 1973 im Rahmen des Gold-Devisen-Standards (*gold exchange standard*) weitergeführt worden sind. Allerdings hat man dem hinzuzufügen, dass der Umschwung zu flexiblen Wechselkursen eher eine Zwangslösung aufgrund der systematischen Unfähigkeit, spekulativen Ab- und Aufwertungskräften an den Devisenmärkten standzuhalten, gewesen ist. Der IWF hat sich also wieder einmal neu erfinden müssen, was einerseits als Beweis für Anpassungsfähigkeit gelobt, andererseits als Scheitern bei der Gewährleistung eines *stable system of exchange rates* (Art. IV, Sektion 1 der *Articles of Agreement* des IWF) abgestempelt werden mag. Wäre jedwede Umgestaltung des IWF nach einem Keynes-Plan-ähnlichen Muster also aufgrund von Spekulation schon im Voraus zu Misserfolg verurteilt? Nicht unbedingt, wenn man bedenkt, dass zu den Entstehungsursachen heutiger spekulativer Finanzinstrumente (neben den herkömmlichen wie Überausgabe von Geldmitteln seitens des Bankensystems oder lückenhafter Finanzaufsicht) auch Eurodevisen zählen, die genau aus dem Gebrauch von Leitwährungen im internationalen Handel entspringen. Wenn die goldgebundenen *Bancor*-Eigenschaften im Rahmen des Keynes-Plans zweifellos überholt sind, ist es die Idee, dass internationale kommerzielle/finanzielle Transaktionen nur über internationales (d. h. von einer „Zentralbank der Zentralbanken" neutral ausgestelltem) Geld abgewickelt werden sollten, keineswegs. Daraus würde sich mehr Währungsgerechtigkeit ergeben, aber vor allem würde der internationale Zahlungskreislauf tatsächlich ein solcher werden – also jene bereits auf nationaler Ebene vorliegenden Charakteristika (z. B. Clearingsystem, Notenbankgeld als Numéraire usw.) auch international reproduzieren. Schliesslich erinnert David D. Driscoll in *The IMF and the World Bank: how do they differ?* aus dem Jahre 1995,

wie John Maynard Keynes „*admitted at the inaugural meeting of the International Monetary Fund that he was confused by the names: he thought the Fund should be called a bank, and the Bank should be called a fund. Confusion has reigned ever since*" (S. 1). Dass selbst die Weltbank ein Fonds (und keine Bank proprio sensu) ist, sei nur dahingestellt. Jedenfalls bleibt das hier besprochene Schriftwerk sogar ein Muss für jeden, der wirtschaftshistorische neben monetären Interessen pflegen sollte.

AUSSENWIRTSCHAFT 70.1

Trade wars and the swiss Economy

Book review