



# Duty drawbacks, Competitiveness and Growth: The Case of China

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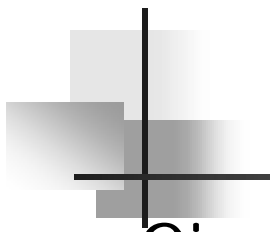
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# Duty drawbacks

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- Duty drawbacks for imported inputs used in the production of exports
  - A ‘concessional’ trade liberalization instrument
  - Reduce the cost of imported inputs, the anti-export bias in protected economies, popular as an indirect tax incentive for foreign direct investment
  - Widely used, very important for manufacturing
  - Little consensus whether countries should embrace duty drawbacks, and if adopted, whether they are effective



# Duty drawbacks in the literature

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- Given relatively little attention in the literature
  - Herander (1986) studied implications of duty drawbacks for the structure of protection
  - Panagariya (1992) introduced a model to study the welfare implications of trade reform in a small, open economy with duty drawbacks
  - Gruen (1999) argues that duty drawbacks can be used to specify a flexible liberalization path and speed up the opening of protected economies
  - Cadot *et al.* (2003) show in a political economy setting that full duty drawbacks granted to exporters decrease their incentives to counter-lobby against high tariffs on their inputs and can slow down trade liberalization



# Objectives

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- To analyze the impacts of duty drawback reform in the presence of domestic distortions
- To estimate the effects of a potential complete abolition of China's duty exemption system in 2007, when China would have fulfilled its WTO commitments



# The model

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- Represents a world with  $R$  economies in which there are  $G$  perfectly competitive industries
- Each industry has two types of firms – export-oriented and domestic-oriented
- The two types of firms are identical except that
  - export-oriented firms produce exclusively for export markets using imported inputs that are either exempt from duties or eligible for refunds on the import tax paid
  - domestic-oriented firms supply exclusively the domestic market and pay duties on all imports of intermediate inputs
  - the intensity of imported intermediate use in the export-oriented sub-sector is higher than that of the domestic-oriented one
- An industry installs domestic and imported capital goods, a portion of which are duty exempt



# The model

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- Each industry uses CRTS technology (Leontief),  $F$  factor inputs and  $G$  intermediate inputs to produce a final product
- Domestic and foreign intermediate are imperfect substitutes in a CES function; so are imported inputs from different sources; as well as factor inputs
- Producers minimize:
  - unit intermediate inputs costs given prices, taxes and a CES function that relates the level of output to intermediate inputs
  - unit factor costs given prices and taxes, and a CES function that relates the level of output to the factor inputs
- Factor inputs are exogenously supplied



# The model

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- Aggregate output of domestic firms in industry  $i$  of region  $r$  meets demand for intermediate and final use of good  $i$
- Aggregate output of exporting firms in industry  $i$  of region  $r$  meets import demand of all trading partners
- Each region  $r$ 's final demand is governed by a representative, regional household that allocates regional income from factor services and taxes across private consumption, government expenditure and saving according to a Cobb-Douglas utility function
- Both private and government final demands are CES functions of composite domestic and imported products
- Aggregate investment is such that the trade balance is a fixed share of income

# Welfare effects of duty drawbacks reform

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- Difficult to estimate the welfare change of duty drawback reform in the general case without a numerical simulation
- However, we can discuss the stylized facts using the case of a small economy with 3 final goods ( $D$ ,  $X$ , and  $N$ ) and the following simplifying assumptions:
  - $D$  is an importable,  $X$  is an exportable and  $N$  is freely traded
  - Only  $D$  and  $X$  use an imported intermediate that is not produced at home
  - Value added is a linear homogenous function
  - Transport costs, export taxes and taxes on intermediate and factor inputs are negligible
  - Domestic and foreign goods are perfect substitutes



# Welfare effects of duty drawbacks reform

- From these assumptions and the zero profit condition, it follows that the price of value added:

$$p_{v_D} = (1 + t) / (1 + \mathbf{t}^D) - (1 + t^M) a^D,$$

$$p_{v_X} = 1 / (1 + \mathbf{t}^X) - (1 + t^M (1 - \mathbf{f})) a^X.$$

$p^D = (1 + t) / (1 + \mathbf{t}^D)$ ,  $t$  is tariff on D,

$0 \leq \mathbf{f} \leq 1$  is the extent of the duty drawback

$t^M$  is tariff on the intermediate input;

$\mathbf{t}^D$ ,  $\mathbf{t}^X$  are output taxes on D and X

$a^D$ ,  $a^X$  are the input - output ratios in D and X

# Welfare effects of duty drawbacks reform

- The equilibrium of the economy is given by:

$$R(p_{v_D}, p_{v_X}, 1) + T = E((1+t)/(1+t^D), 1/(1+t^X) + f t^M a^X, 1; u)$$

$R(.)$  is the revenue function resulting from  
max GDP subject to full employment

$E(.)$  is the expenditure function obtained by min expenditure  
in order to achieve welfare no worse than  $u$

$$T = t(E_1 - R_1) + t^M a^D R_1 + t^M a^X R_2 - t^M f.a^X (R_2 - E_2) + t^D R_1 + t^X R_2$$

# Welfare effects of duty drawbacks reform

$$(E_u - tE_{1u} - t^M f a^X E_{2u}) \frac{du}{df} =$$

$$a^X t^M [tE_{12} + t^M f a^X E_{22} + (t^D + t^M a^D - t)R_{21} + (t^X + a^X t^M (1-f))R_{22}]$$

- Determined by totally differentiating the equilibrium condition and setting:

$$dt = dt^M = dt^D = dt^X = 0$$

- The terms on the RHS depict the allocative efficiency effect of a change in demand and supply for goods  $D$  and  $X$ , in response to a change in the duty drawback
- We conclude that the welfare effect is ambiguous

# Welfare effects of duty drawbacks reform

- The following simplifying assumptions can lead to a few more specific cases

- $D$  and  $X$  are substitutable in production and consumption

$$E_{12} > 0 \quad R_{12} < 0$$

- Supply is upward sloping, demand is downward sloping

$$E_{22} < 0 \quad R_{22} < 0$$

- $D$  and  $X$  are normal goods

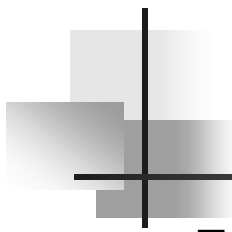
$$(E_u - tE_{1u} - t^M f a^X E_{2u}) > 0$$

# Welfare effects of duty drawbacks reform

- Introducing duty drawbacks has an unambiguously positive welfare effect, if  $X$  faces an output tax,  $D$  is subsidized, has a uniform or escalating tariff structure or uses only a small portion of the imported input
- Reducing full duty drawbacks has an ambiguous welfare effect in an economy with nonzero tariffs
  - More likely to be welfare reducing when  $D$  has escalating tariff structure and is protected by output subsidies, while output of  $X$  is taxed
  - Chances that the welfare effect is negative increase with higher tariff  $t$ , lower  $t^M$  and  $a^D$

# Welfare effects of duty drawbacks reform

- In the case of partial duty drawbacks ( $0 < \tau < 1$ ), the welfare effect is ambiguous; the welfare effect of an increase (reduction) in duty drawbacks is more likely to be positive (negative) when  $t > 0$ ,  $t^D < 0$ ,  $t^X > 0$  are large,  $t^M > 0$ ,  $\tau$  and  $a^D$  are small.
- $a^X$  and  $t^M$  are positively related to the size of the welfare effect
- In a large country, a non-negative terms of trade effect also affects the welfare outcome. Under perfect competition, this effect is inversely related to the direction of duty drawback change
- In all cases, the welfare effects must reflect changes in costs associated with the administration and misuse of duty drawbacks. These may be nontrivial in size.



# China's duty exemptions: positive effects

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- Improved competitiveness
- Improved efficiency
- Boosted trade growth (between 1979 and 2000, EP trade grew from 5% to 50% of total trade)
- Facilitated integration into world production sharing, thus speeding
  - Export diversification
  - Technological upgrading
- Boom in EP created millions of jobs
- Provided incentives for FDI

# China's duty exemptions: problems

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- Leakages in the tariff collection system and fraud related to misuses of the duty exemption system
  - In China, tariff collection rates have been low resulting in a large discrepancy between statutory tariffs and actual tariff collection rates;
  - Reasons:
    - A rising share of duty-free imports led to effective average tariff rate of just 6.5% compared to the statutory average tariff of 16.4% in 2000
    - The difference between 6.5% and 4% tariff collection rate (US\$ 3.5 bn) in 2000 is an upper bound of the leakage in tariff collection associated with duty exemptions
    - Other estimates suggest the leakage in tariff revenue collection to be around US\$ 1.5 bn.





# China's duty exemptions: problems

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- Administrative costs
  - Relatively low in China (only 10% of Customs' labor force involved in the administration of duty exemptions)
- Trade imbalances
  - Imports in China coming mainly from East and South East Asia
  - Exports going primarily to EU, USA and Japan
  - US trade deficit with China is largest among all trading partners; could widen further during the WTO reform period (Ianchovichina and Martin, 2004)



# China's duty exemptions: problems

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- Exports with low domestic value-added
  - In 1992 domestic value-added was 20 percent of the value of processed exports; by 2000 it rose to 30 percent
  - To some this signaled growing integration of the production processes in China
  - However, evidence suggests that the increased local content is due to a rise in transactions among foreign affiliates located in China
  - Reasons for weak linkages between the export- and domestic-oriented sectors are:
    - Quality differences between imports and domestic inputs, tight delivery schedules and large volume orders, limited access to domestic raw materials

# Will duty exemptions be worth the hassle after 2007?

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- Compliance with WTO commitments will lessen the barriers between domestic and export markets
  - Statutory tariffs will fall to an average of 6.8%
  - Local content requirements, foreign balancing rules and the complex system of trading rights will be abolished
- Duty exemptions are consistent with China's WTO commitments, yet given all other reforms, it is important to evaluate whether they will still be worth the hassle in 2007



# Simulation design

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- Empirical model has 20 regions, 25 industries and 5 factor inputs
- Starting from a data base representing the world economy in 2007 and reflecting the implementation of China's WTO commitments as in Ianchovichina and Martin (2004)
- The experiment considers the removal of duty drawbacks on imported inputs used in the production of exports
- Macro closure: full employment; perfect mobility of capital and skilled labor; perfect mobility of unskilled workers between non-farm sectors and farm sectors, but barriers to mobility between farm and non-farm jobs; little induced change in net international capital flows

# The welfare effect of duty exemption removal in China

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	Large country (US\$ bn.)	Small country (US\$ bn.)
Equivalent variation	4	-2
Terms of trade effect	6	0
Allocative efficiency effect	-2	-2
Taxes on factor employment	-0.2	-0.2
Import taxes	-1.5	-1.5
Savings due to reduction in EP related fraud	[2, 4]	[2, 4]
Total welfare gain	[6, 8]	[0, 2]



# The welfare effect of duty exemption removal

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- The direction of the allocative efficiency effect is negative, a likely outcome since China has escalating tariff structure (World Bank, Trade) and full duty exemptions to start with
- The two cases presented here are extremes in the sense that China is neither likely to be a price taker in all commodities, nor it is likely to have a strong impact on world prices in most goods
- The Armington assumption tends to lead to strong terms of trade effects, implying that China is likely to benefit, but the gains could be much smaller than US\$ 6 bn. per year



# Other effects of duty exemption removal

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- Loss of competitiveness of Chinese firms
  - The export volume will contract on average by 6%, with exports of key sectors facing significant declines
    - Auto exports contract by 38%, cotton – 17%, beverages – 11%, textiles and apparel – 7%, electronics – 5% and light manufacturing – 4%
- Growth will not be hurt as a decline in exports will be offset by an increase in domestic sales
- Wages and domestic consumer prices will be unaffected, falling by less than half a percent



# Other effects of duty exemption removal

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- Domestic supply chains will deepen as demand for domestically manufactured intermediates increases
- Bilateral trade surplus with North America will decline by 6 percent (US\$7 bn.), easing to a large extent the trade related tensions with the US that are expected to intensify by 2007; (Ianchovichina and Martin, 2004) find that the bilateral trade surplus with the US is expected to increase by 10 percent due to implementation of selected reforms associated with WTO accession





# Concluding remarks

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- The empirical global CGE model, based on GTAP, is rich in detail allowing us to estimate welfare, as well as the impact on growth, employment, trade, supply chains, factor returns
- Are China's duty exemptions worth the hassle after 2007? Answer is most likely 'yes' because welfare gains may be small, while losses to key manufacturing sectors are sure to be sizable.
- The aggregation in this paper hides important information on intra-industry trade as well as the effects on selected activities within sectors