# The Relevance of the EU Entry Price System for Fresh Fruit and Vegetable Exports from China to the EU

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**Abstract**

China's exports of apples and pears to the EU are increasing, although EU imports are restricted by the EU entry price system (EPS). The EPS aims to prevent imports below the entry price, which acts as a minimum import price, to protect EU growers of apples and pears. This study investigates the restrictiveness of the EPS for Chinese exports of apples and pears to the EU. Results suggest that the high effectiveness of the EPS for apples originating in China limits to the years 2003, 2004 and 2005. For pears originating in China, our results indicate that the EPS is relevant throughout the whole period underlying this analysis, with the highest relevance prevailing in 2004, 2005 and 2006. In the future, the relevance of the EPS is expected to decline.

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## 1 Introduction

China is the largest producer of fresh fruits and vegetables in the world, accounting for 36 % of world production in 2005 (FAO, 2009). Also, China has become a major exporter of fresh fruits and vegetables in recent years. Between 2002 and 2006, China's fresh fruit and vegetable exports rose continuously, more than doubling in value to reach nearly $5 billion US in 2006 (FAO, 2009). The net trade position for fresh fruits and vegetables has also come close to doubling during this period, reaching $3.5 billion US. Although the European Union (EU) is not a major destination market for fresh fruit and vegetable exports from China, some products, such as apples and pears, are exported to the EU at an increasing rate.

Apple and pear exports of China to the EU are, however, subject to the EU most favoured nation (MFN) import barriers and thus face no preferential market access, as China has no preferential trade agreement with the EU. In particular, exports of apples and pears from China to the EU have to comply with the EU entry price system (EPS). The EPS protects EU growers of 15 kinds of fresh fruits and vegetables against international competition. The EPS aims to restrict fresh fruit and vegetable exports to the EU below a minimum import price by the means of a product-specific, politically-designated entry price (EP). Also, the EPS includes ad valorem tariffs of up to 20%.

In light of increasing fruit and vegetable exports of China to the EU, the question is to which extent Chinese fresh fruit and vegetable exports to the EU are restricted by the EPS[1]. Also, would Chinese fresh fruit and vegetable exports increase further if trade would be liberalized?

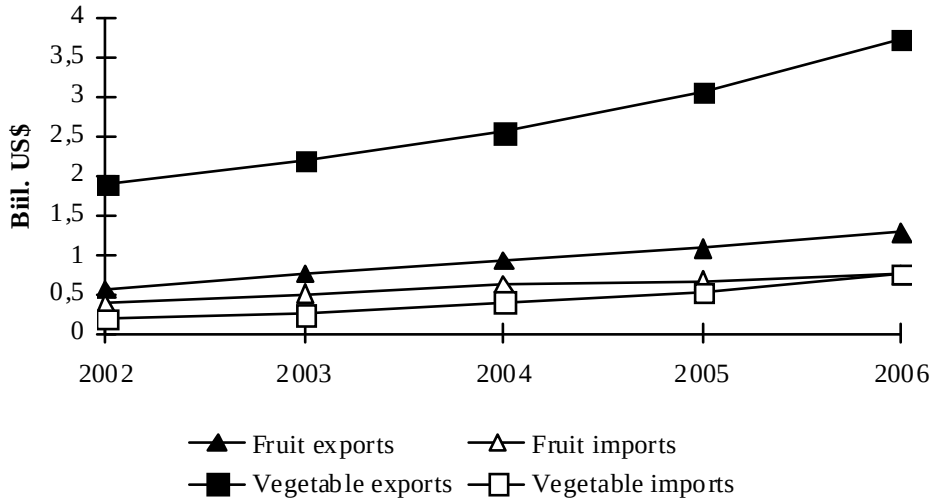
The objective of this paper is to explore the relevance of the EPS for Chinese fruit and vegetable exports to the EU in detail. We proceed as follows. Section 2 gives a short overview of the Chinese fresh fruit and vegetable trade and section 3 explains the functioning of the EPS. Section 4 presents and discusses two indicators which are used as variables in a cluster analysis, identifying four classes differing in the effectiveness of the EPS. Section 5.1 summarizes the results of a general analysis on the effectiveness of the EPS for all kinds of fresh fruits and vegetables to which the EPS applies and for all major countries of origin (Goetz and Grethe, 2009). This analysis makes evident that the EPS is in general of low relevance for the countries exporting apples and pears to the EU, with the exception of China. Therefore, section 5.2 provides a more complete analysis of the restrictiveness of the EPS for Chinese exports of apples and pears, the only fresh fruit and vegetables exported from China to the EU which are subject to the EPS. Section 6 draws conclusions and gives an outlook on the future development of fresh fruit and vegetable exports from China to the EU.

[1] In this paper we use the terms „restrictiveness" and „effectiveness" of the EPS equivalently. If the EPS is effective, then it has some influence on the EU import price and/or the import quantity.

## 2 Chinese Fresh Fruit and Vegetable Trade

Figure 1 displays China's fresh fruit and vegetable trade from 2002 to 2006. For vegetables as well as fruits, China is a net exporter over this period, net exports rising continuously and reaching $3.5 billion US in 2006.

**Figure 1: China's Fresh Fruit and Vegetable Trade (2002-2006, bill. US$)**



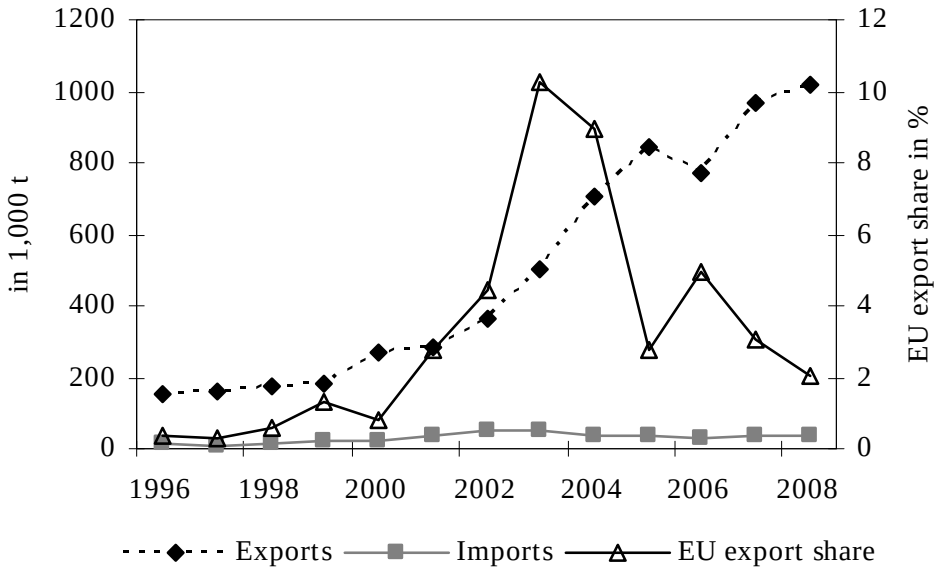

Sources: FAO (2009), own calculations.

China's exports of fresh apples and pears also increased significantly. China is a strong net exporter of apples and pears with exports of apples amounting over 1 million t and pears about 450 million t in 2008 (Figures 2 and 5).

China's major export destinations for apples and pears are countries of the former Soviet Union such as Russia and Kazakhstan, and Asian countries such as Indonesia, Philippines, Thailand and Vietnam (Figures 3 and 6). The EU as a major export destination ranks 9$^{th}$ for apples and 8$^{th}$ for pears.

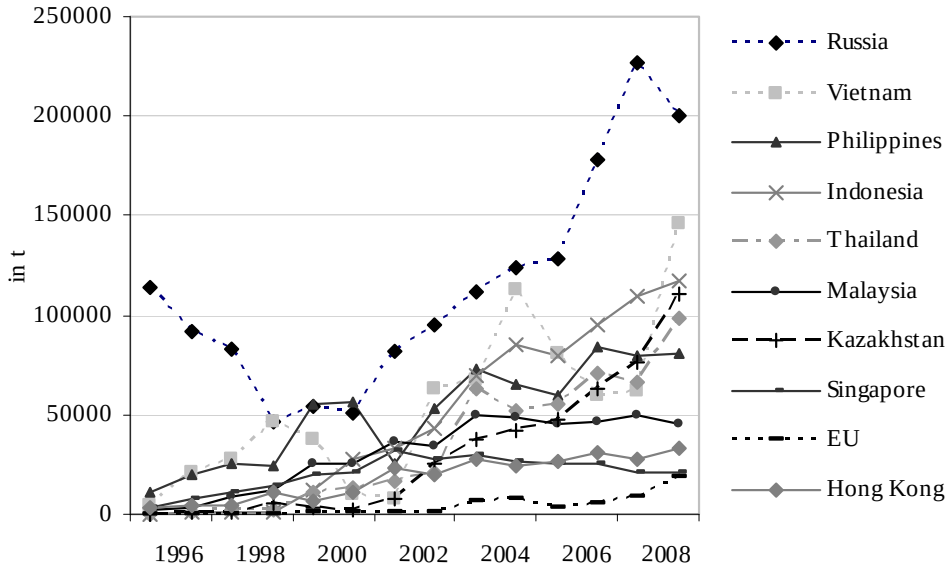
Although the EU market is not a major destination, the share of China's exports of apples to the EU in China's total apples exports increased from below 2% before 2000 to over 10% in 2003, sharply decreasing afterwards and falling below 2% in 2008 (Figure 2). The share of China's EU exports of pears increased from below 2% of China's total apple exports in 1999 up to about 7% in 2002, but it decreased to a lesser degree compared to apples afterwards, to a share varying between about 5-6% (Figure 5).

**Figure 2: China's Apple Trade (1996-2008, in 1,000 t)**




Sources: GTIS (2009), own calculations.

**Figure 3: Development of China's Apple Exports to its 10 Major Destinations 1996-2008**



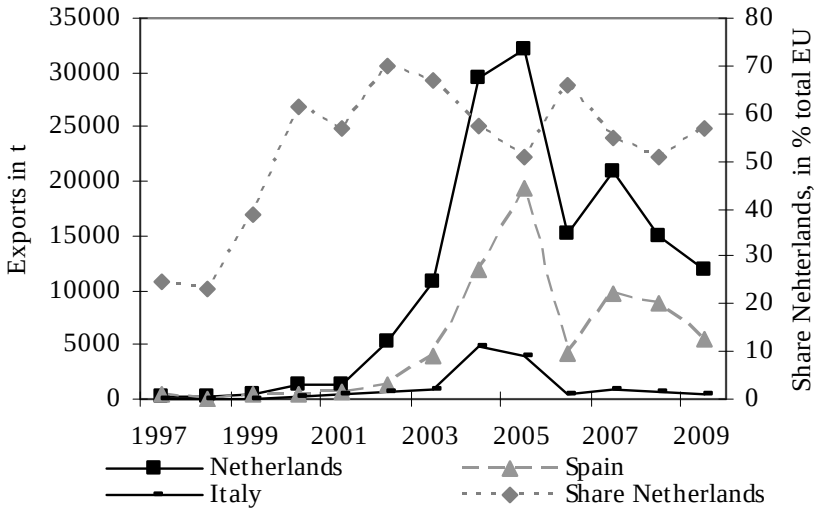

Sources: GTIS (2009), own calculations.

The Netherlands are the primary destination of Chinese apple and pear exports to the EU, it's share in total China's EU exports varying between 51-70% for apples and 65-73% for pears in recent years (Figures 4 and 7).

Due to serious difficulties with monitoring China's apple exports to the EU in 2005, the EU introduced a licensing system for apple imports which became effective in 2006. Regulation 179/2006 (OJ 2006, L29/26) lays down the details of the licensing system. Importers have to apply for an import license for apples of a particular country of origin, which is valid for 3 months. To

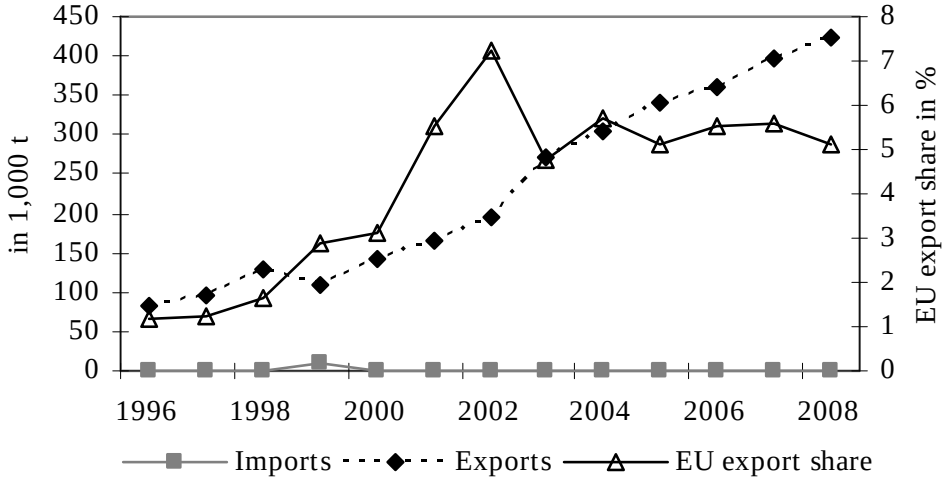
ensure that the license is utilized, the importer has to pay a security of 15€/t. The security is forfeited if the import is not carried out or carried out only partly.

**Figure 4: Development of China's Apple Exports to the 3 Major Destination Countries in the EU, 1997-2009**



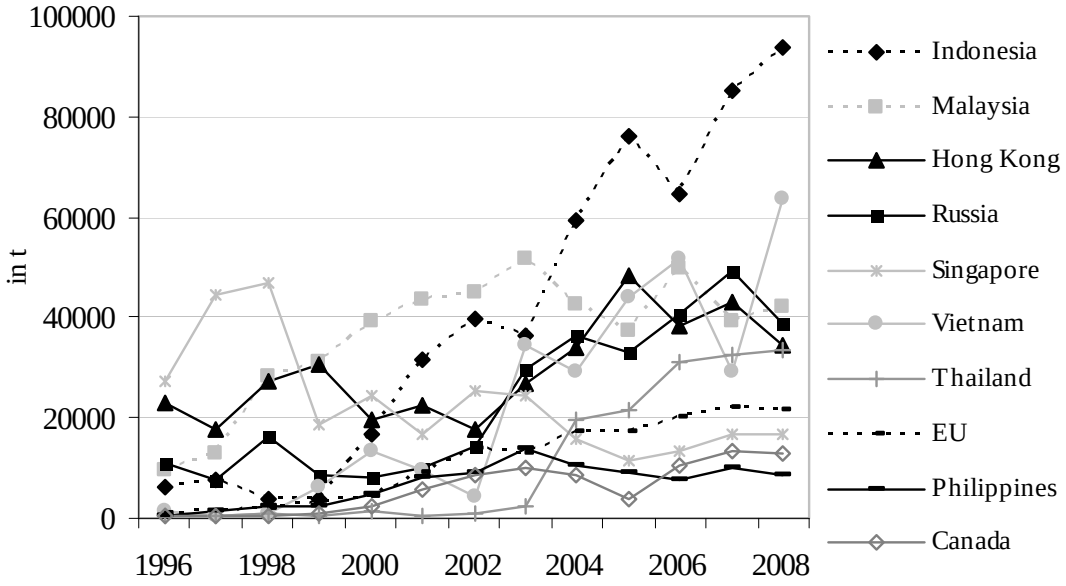

Sources: GTIS (2009), own illustration.

**Figure 5: China's Pear Trade (1996-2008, in 1,000 t))**



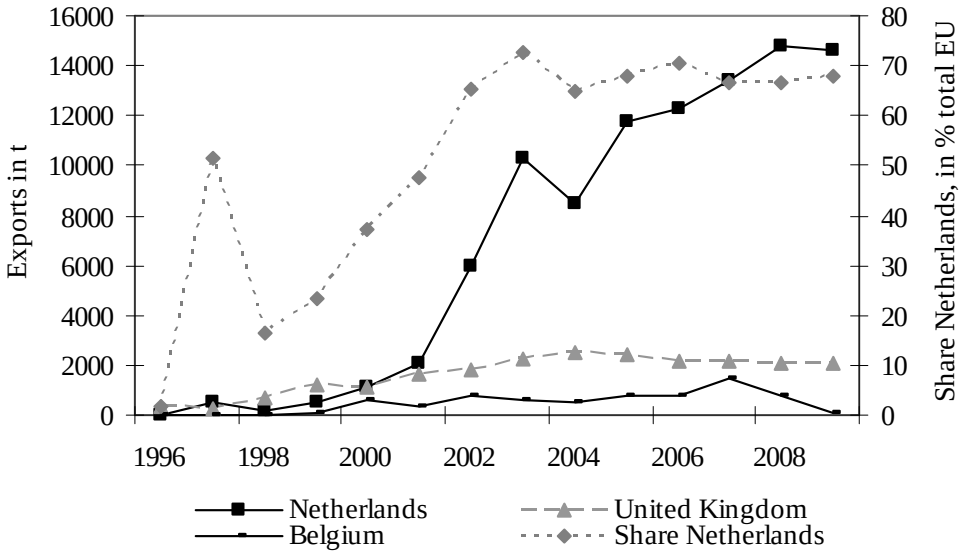

Sources: GTIS (2009), own calculations.

**Figure 6: Development of China's Pear Exports to its 10 Major Destinations 1996-2008**




Sources: GTIS (2009), own calculations.

**Figure 7: Development of China's Pear Exports to the 3 Major Destination Countries in the EU, 1996-2009**




Sources: GTIS (2009), own illustration.

## 3 The EU Entry Price System for Apples and Pears

The EU production of 15 kinds of selected fresh fruit and vegetables, including apples and pears, are protected against international competition by the EPS. The EPS aims to restrict imports below a minimum import price, the product-specific, politically-designated EP. Also, *ad valorem* tariffs

up to 20% apply. Besides, there are zero tariff rate quotas and entry price quotas[2] for some products which warrant preferential access to the EU market. The EPS for apples is effective year-round (Table 1). It comprises a MFN EP level varying between 457 €/t (1.7.-31.12.) and 568 €/t (1.1.-30.6) In addition, ad valorem tariffs of up to 11.2% apply. If the import price is lower than the EP an additional specific tariff is levied, which is equal to the difference between the actual import price and the EP. Thus, the specific tariff ensures that the actual import price does not undercut the EP. If the EP is undercut by 8% or more, the maximum specific tariff, referred to as the maximum tariff equivalent (MTE), of 238 €/t or in other words 42% (1.1.-30.6.) to 52% (1.7.-31.12.) of the MFN EP is charged. According to the information of traders, the MTE makes it unprofitable for traders to export to the EU.

As an example, apples are imported by the EU from China on January 15 (Figure 8). Then, an MFN EP of 568 €/t and an ad valorem tariff of 4.0% (if the import price is at least as high as the MFN EP) or 6.4% (if the import price is lower than the MFN EP) applies. Thus, the minimum import price amounts 590.7 €/t. Suppose apples originating in China are imported by the EU at a price of 539.6 €/t. Then, the MFN EP is undercut by 5% (28.4 €). In this case, an ad valorem tariff of 6.4% (=34.5 €/t) applies and a specific tariff of 28.4 €/t is levied resulting in an effective import price of 602.5 €/t, which exceeds the minimum import price.

**Table 1: The EPS for Apples and Pears**

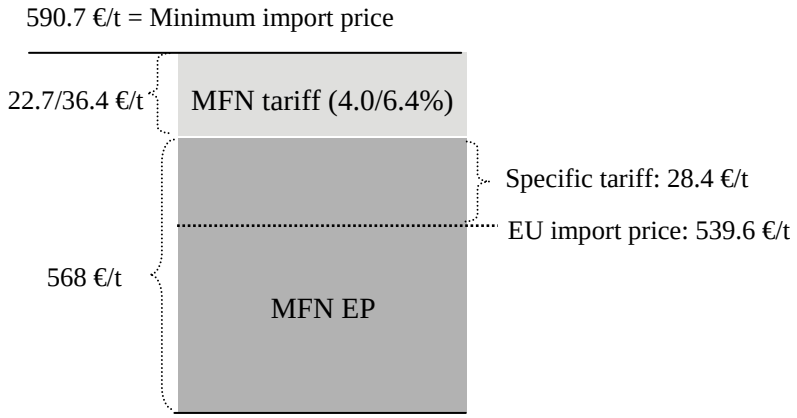
<table>
<tr><th></th><th>MFN ad valorem tariff (%)</th><th>MFN EP (€/t)</th><th colspan="2">Specific tariff</th></tr>
<tr><th></th><th></th><th></th><th>MTE (€/t)</th><th>MTE (% of MFN EP)</th></tr>
<tr><td colspan="5">Apples</td></tr>
<tr><td rowspan="4">(year-round)</td><td>4.0[a]/6.4[b] (1.1.-31.3.)</td><td rowspan="2">568</td><td rowspan="4">238</td><td rowspan="4">41.9-<br><br>52.1</td></tr>
<tr><td>0.0/3.0 (1.4.-30.6.)</td></tr>
<tr><td>0.0/4.8 (1.7.-31.7.)</td><td rowspan="2">457</td></tr>
<tr><td>9.0/11.2 (1.8.-31.12.)</td></tr>
<tr><td colspan="5">Pears</td></tr>
<tr><td rowspan="4">(1.7.-30.4.)</td><td>0.0/4.0 or 4.0/8.0 (1.7.-31.7.)</td><td>456</td><td rowspan="4">238</td><td rowspan="2">46.7</td></tr>
<tr><td>10.4 (1.8.-31.10.)</td><td>388</td></tr>
<tr><td>10.4 (1.11.-31.12.)</td><td rowspan="2">510</td><td rowspan="2">61.3</td></tr>
<tr><td>8.0 (1.1.-30.4.)</td></tr>
</table>

a if the import price is at least as high as the MFN EP
b: if the import price is lower than the MFN EP

Sources: TARIC (2009), own calculations.

[2] An entry price quota includes a preferential entry price which is lower than the MFN entry price.

**Figure 8: EPS Market Access Conditions for Apples Originating in China, January 1-March 31**




Sources: European Commission, 2009; own calculations.

The EPS for pears is effective from July 1 to April 30. Depending on the season, 3 MFN entry prices and 4 different levels of a MFN tariff are distinguished. The level of the MTE for pears is equal to that for apples.

For apples and pears no preferential EP exists; thus trade preferences regarding apples and pears may involve that the MFN EP applies (but the ad valorem tariff is reduced) or that the MFN EP is completely removed (e.g. as realized within the Everything-But-Arms-Initiative).

One difficulty of monitoring compliance with the EPS is that a large share of fruit and vegetable imports in the EU is paid on commission, meaning that the import price is not determined until the product is sold in the EU import market. Therefore, the EC calculates a synthetic import price, the standard import value (SIV). Fruit and vegetable prices - surveyed for each product and export country individually - are collected from representative fruit and vegetable wholesale markets in all EU member countries. The daily SIVs are calculated as the weighted average of collected wholesale market prices, less a marketing and transportation margin and custom duties.[3]

During customs clearance, exporters have three options to declare fruits and vegetables which are subject to the EPS. According to the SIV method, the produce is declared based on the product-specific SIV as surveyed by the EC on the respective import date. This method is easy to apply for the importer and does not result in specific tariff charges if the actual SIV calculated for the point of time of customs clearance is higher than the EP. Two reasons, however, may establish an incentive for the importer to apply an alternative method. If the SIV is below the EP at the point of time of customs clearance, additional specific tariffs have to be paid. Also, if the SIV is by far higher than the EP, high *ad valorem* tariffs have to be paid. In these two cases, it is more favourable for the exporter to declare the products at the value as indicated by an invoice (invoice method). If the invoice method is used, the import charges are based on the f.o.b. invoice price adjusted for insurance and freight costs and thus the actual c.i.f. price. A third option is customs

[3] Details of the calculation of the SIV are set down in Regulation 3223/94 (OJ 1994, L337/66).

clearance by the deductive method, which is based on the final selling price of the shipment to be proven by invoice.

The EPS offers opportunities to legally and illegally circumvent paying specific tariffs, although the produce is finally sold at prices below the EP (García-Álvarez-Coque, 2002). According to information from importers, illegal circumvention is more prevalent in small-scale trading, particularly between related trading partners. Legal circumvention involves storing produce in the EU since stored products can be imported at any time but is declared for customs clearance at the point of time when the SIV is above the EP so that no specific tariff has to be paid. Once cleared at a favourable SIV, the product can be sold in EU markets at any price.

## 4 Indicators for Analyzing the Restrictiveness of the System

We develop two indicators to measure the effectiveness of the EPS based on import price data for each of the 15 products to which the EPS applies and for the respective countries of origin separately.[4] This allows us to distinguish the restrictiveness of the EPS for e.g. apples originating in China from apples originating in South Africa. In this study we utilize SIV data as a measure for the EU import price.

The two indicators are based on the relative difference between the SIV and the respective EP, which we define as GAP, and calculate as follows:

$$(1) \qquad GAP_{ijt} = \frac{(SIV_{ijt} - EP_{ijt})}{EP_{ijt}}$$

where *i*=kind of produce, *j*=country of origin, and *t*=time. If $GAP_{ijt} \geq 0$, the import price is equal to or higher than the EP. If $GAP_{ijt} < 0$, the import price is lower than the EP and a specific tariff (if $-0.08 < GAP_{ijt} < 0$) or the MTE (if $GAP_{ijt} \leq -0.08$) is levied.

As an example, Figure 9 shows the distribution of GAP for apples originating in China (1997-2005). Several characteristics of the distribution of $GAP_{ijt}$ can be identified which are related to the relevance of the EPS. Observations of the import price with $GAP_{ijt} < 0$ indicate that there exists a wholesale market supply below the EP. Therefore, we assume if $GAP_{ijt} < 0$, an export supply below the EP exists also. In addition, the higher the share of observations of the SIV with $GAP_{ijt} < 0$, the higher the export supply at prices below the EP. We assume that the EPS is relevant in this case.

Though, the export supply quantity below the EP may be smaller than the wholesale market supply quantity due to circumvention of the EPS. Supposing that legal or illegal circumvention of the EPS is only possible to some degree, and/or that circumvention involves additional costs (e.g. for storage), a high share of observations with $GAP_{ijt} < 0$ indicates that abolishing the EP would result in an increase of export supply at prices below the EP. The stronger the degree of

[4] For a more detailed description of the analysis see Goetz and Grethe (2009).

circumvention and/or the lower the cost of circumvention, the less the EPS restricts the existing export supply below the EP, and the lower the effect of abolishing the EP would be.

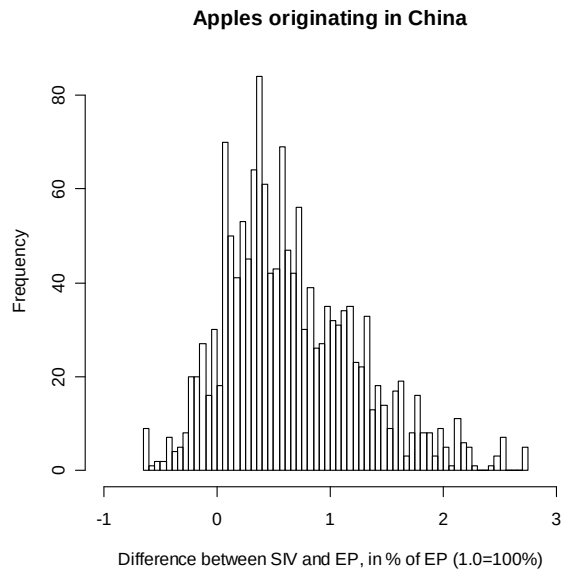
Therefore, we define the share of observations with $GAP_{ijt} < 0$ of all observations of $GAP_{ijt}$ as one indicator of our analysis as

(2) $neg.GAP_{ij}$ = (number of observations $GAP_{ijt}$ with $GAP_{ijt} < 0$)

/ (number of observations $GAP_{ijt}$)

where *i*=kind of produce, *j*=country of origin, and *t*=time (correlated with the importance of the EPS). The smaller $neg.GAP_{ij}$, the less relevant is the EP for the import price for produce *i* exported by country *j*. Conversely, the larger $neg.GAP_{ij}$, the higher the influence of the EPS on the EU import price. A similar variable was used in previous studies on the effectiveness of the EPS and RPS by Cioffi and dell' Aquila (2004) and Swinbank and Ritson (1995), respectively.

**Figure 9: Histogram for Apples from China (1997-2005)**




Source: Own calculations based on European Commission (2006).

One drawback of this indicator is that it is confined to the effects of the EPS on observations with $GAP_{ijt} < 0$ and does not cover the influence of the EPS on observations with $GAP_{ijt} > 0$.

Therefore, we derive a second indicator from the assumption, supported by anecdotal evidence, that exporters may supply their produce at the lowest possible price while complying with the EP, thereby utilizing their competitive cost advantage and avoiding additional specific tariffs. This implies an accumulation of observations with $GAP_{ijt} > 0$ closely above the EP. Here, the EP is relevant for exporters and has a significant influence on the price of the export supply. If the EP was abolished, export supply at prices below the EP would increase. Conversely, the EPS has no influence on observations with $GAP_{ijt} > 0$ with the SIV being significantly higher than the EP. The degree of accumulation of observations with $GAP_{ijt} > 0$ slightly above the EP can be measured by

the quantile with p=0.05 of the distribution of $GAP_{ijt}$ with $GAP_{ijt} > 0$. The quantile with p=0.05 measures the highest $GAP_{ijt}$ value in the set of observations that belong to the bottom 5% of the distribution of observations with $GAP_{ijt} > 0$. The lower the value of the 0.05-quantile, the more observations accumulate slightly above the EP. Since the variance of $GAP_{ijt}$ may change by type of produce and country of origin - and due to the fact that the 0.05-quantile of distributions with differing variance are not exactly comparable - the 0.05-quantile is standardized by the standard deviation. In addition, large values are given less weight by creating a logarithm of the 0.05-quantile because the efficiency of the EPS is proportional to the 0.05-quantile within a certain interval only:

$$(3) \qquad Q^{*}_{0.05ij} = \ln\left(\frac{Q_{0.05ij}}{sd(GAP_{ij})}\right).$$

The less $GAP_{ijt}$ accumulates closely above the EP, the larger $Q^{*}_{0.05ij}$ and the lower the influence of the EPS on the EU import price. This indicator explicitly addresses the influence of the EPS on import price observations exceeding the EP ($GAP_{ijt} > 0$).

## 5 The Effectiveness of the EPS

### 5.1 Analysis for Apple and Pear Exports to the EU in General

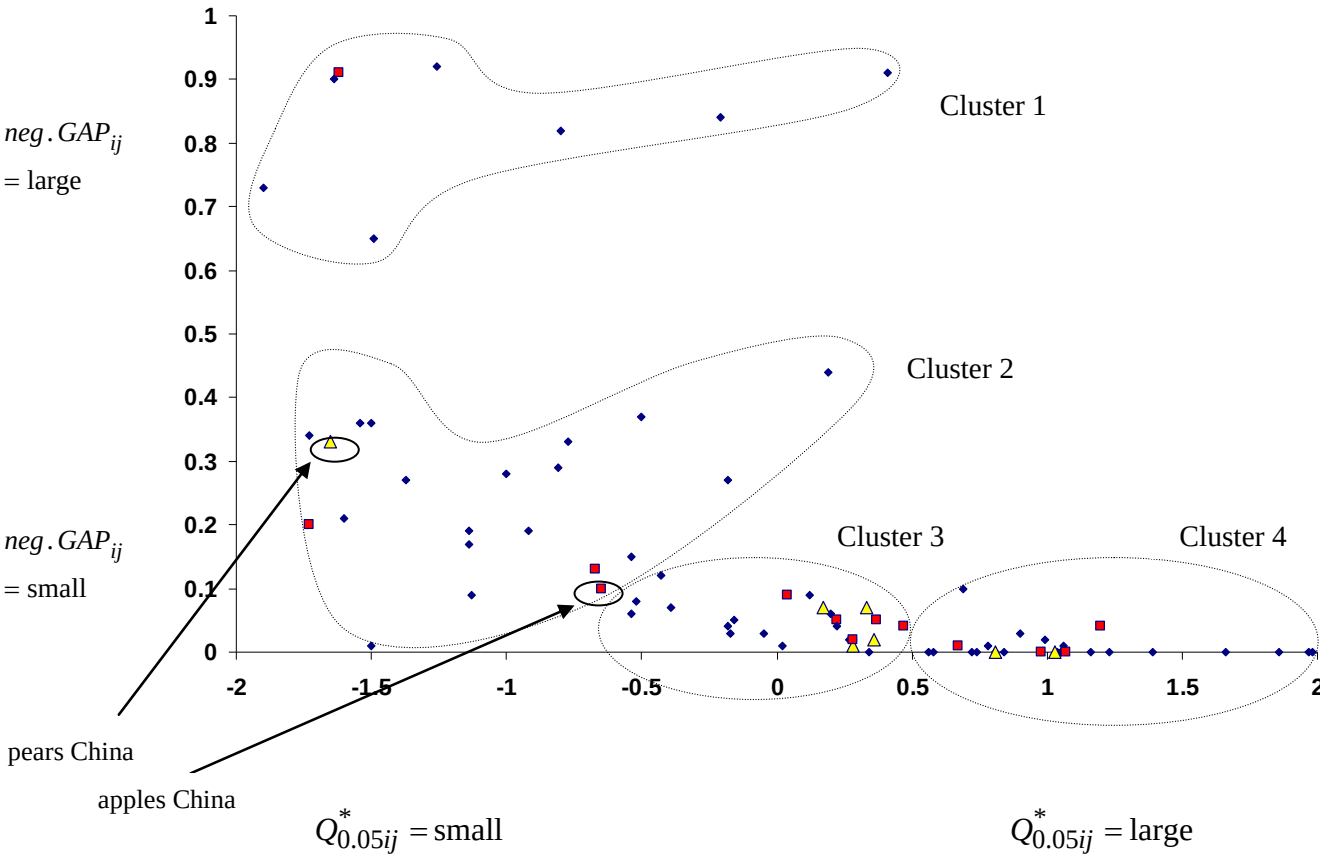
The two above derived indicators $neg.GAP_{ij}$ and $Q^{*}_{0.05ij}$ for the effectiveness of the EPS are calculated for 81 countries and product specific distributions of the SIV data, each distribution comprising between 65 and 2,678 observations (e.g. pears originating in China, see the histogram of the distribution given in Figure 9). We utilize about 57,000 observations of the SIV data in the time period 1995 to 2005. Both indicators are used as variables in a cluster analysis, which attributes the 81 objects, among which are 13 objects with regards to apples and 7 objects with regards to pears, into 4 clusters differing in the relevance of the EPS. The results of the cluster analysis are graphically represented in the cluster plot in Figure 10. Each of the 81 objects are represented by a dot and the objects regarding apples by a square and pears by a triangle, indicating the corresponding values of the 2 indicators. The results with regard to apples and pears are also presented in Table 2.

Cluster 1 is comprised of cases with extremely high shares of negative observations between 65% and 92% and a high degree of accumulation of positive SIVs close to the EP. For this cluster, the EP system has a significant effect on EU import prices. Cluster 3 and particularly cluster 4 display a low share of negative observations of less than 12% and little or no accumulation of positive SIVs close to the EP. Thus, the EPS has minimal relevance for cases attributed to clusters 3 and 4.

Cluster 2 is a relatively heterogeneous cluster. Though, for most elements, the share of negative observations is significant and amounts up to 44%. Also, positive SIVs accumulate closely above the EP. For these cases as well, the EP system clearly has an effect on the EU import price, although to a lower extent.

With regard to apples, 9 out of the 13 cases are attributed to clusters 3 and 4. Apples from China, Turkey and Uruguay are attributed to cluster 2. One exception is apples from Poland which are attributed even to cluster 1. Thus, the results suggest that the relevance of the EPS for apple imports is rather low with the exception of Poland, which entered the EU in May 2004, and China, Turkey and Uruguay, though the share of apples from Turkey and Uruguay in total extra-EU imports is very low.

**Figure 10: Cluster Plot (all observations, 1995-2005)**




Source: Own calculations.

Concerning pears, 6 out of the 7 cases are attributed to clusters 3 and 4 and only apples from China are attributed to cluster 2. Thus, the EPS is of low relevance for pears also with the exception of pears from China.

The surprising result that the EPS is of high relevance for apple and pear imports from China, although China is a country which is far away from the EU and thus faces substantial transport costs, motivates us to analyze the cases apples and pears from China more in detail, focusing on how the restrictiveness of the EPS has developed over time.

**Table 2: Results Cluster Analysis for Apples and Pears**

| | $neg.GAP_{ij}$ | $Q^{*}_{0,05ij}$ (z-standard) | Number of observations | Share in total extra-EU import | Cluster |
|---|---|---|---|---|---|
| **Apples** | **EPS of lowest relevance** (a: >0.98; b: cluster 1: <0.01, cluster 2: <0.04, cluster 3: <0.59, cluster 4: 0.38) | | | | |
| Argentina | 0.09 | 0.04 | 1275 | 0.10 | 3 |
| Australia | 0.00 | 0.98 | 714 | 0.01 | 4 |
| Brazil | 0.05 | 0.37 | 1179 | 0.07 | 3 |
| Canada | 0.00 | 1.05 | 1543 | 0.01 | 4 |
| Chile | 0.05 | 0.22 | 1412 | 0.20 | 3 |
| China | 0.10 | -0.65 | 1493 | 0.02 | 2 |
| New Zealand | 0.04 | 1.20 | 1315 | 0.30 | 4 |
| Poland | 0.91 | -1.62 | 813 | <0.01 | 1 |
| South Africa | 0.04 | 0.47 | 1648 | 0.21 | 3 |
| South Korea | 0.02 | 0.28 | 340 | <0.01 | 3 |
| Turkey | 0.20 | -1.73 | 337 | <0.01 | 2 |
| Uruguay | 0.13 | -0.67 | 788 | <0.01 | 2 |
| USA | 0.01 | 0.67 | 2212 | 0.06 | 4 |
| **Pears** | **EPS of lower relevance** (a: <0.94; b: cluster 2: 0.02, cluster 3: <0.88, cluster 4: <0.04) | | | | |
| Argentina | 0.07 | 0.17 | 923 | 0.43 | 3 |
| Chile | 0.07 | 0.33 | 796 | 0.17 | 3 |
| China | 0.33 | -1.65 | 799 | 0.02 | 2 |
| Hungary | 0.02 | 0.36 | 559 | <0.01 | 3 |
| New Zealand | 0.00 | 0.81 | 136 | <0.01 | 4 |
| South Africa | 0.02 | 0.28 | 1243 | 0.27 | 3 |
| Turkey | 0.00 | 1.03 | 1124 | 0.03 | 4 |

a: The sum of import shares of all countries of origin in total extra-EU imports for the respective product in the time period for which the EPS applies.

b: The sum of import shares of all countries of a specific cluster in total extra-EU imports of one product in the time period the EPS applies.

Observation period: 1997-2005.

Source: Own calculations.

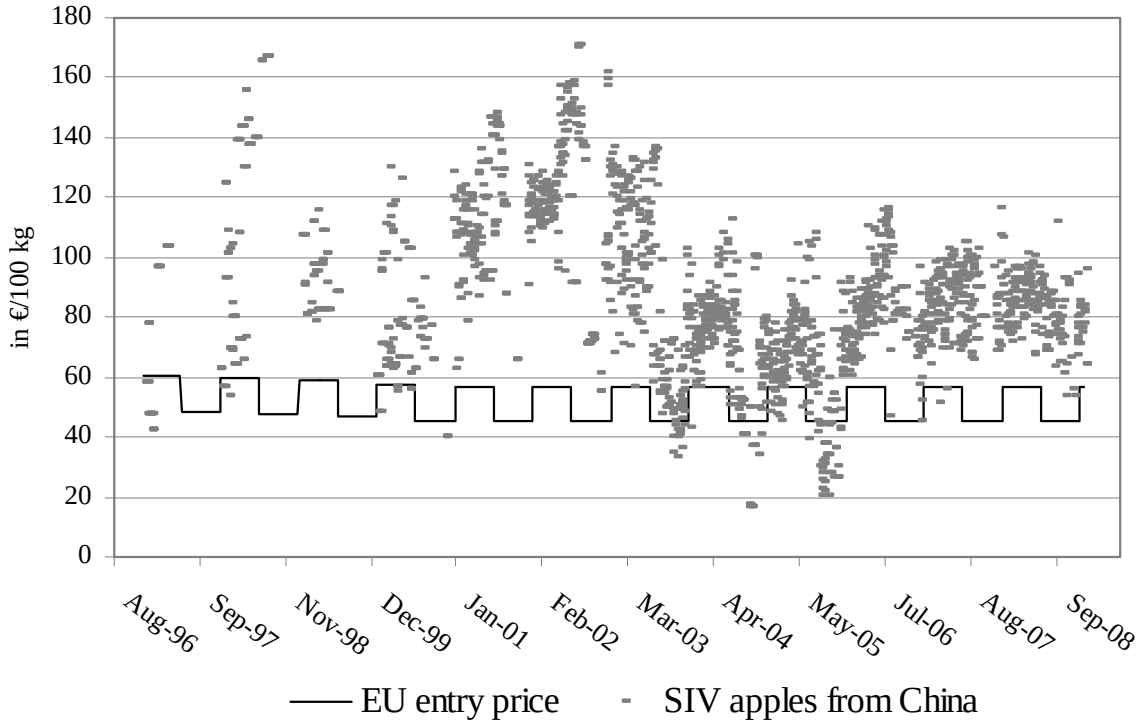
## 5.2 Development of the Effectiveness of the EPS for Apple Exports from China to the EU

Figure 11 displays the level of SIVs and the EP for apples originating in China in the time period 1997 to 2008, and Table 3 shows the corresponding distribution measures for each of the years 1999 to 2008 individually.

The EU import prices for apples from China (measured by SIV) are on average well above the EP until 2003, but start declining in 2002 from a level of 129% above the EP to about 20% above the EP in 2005 on average. Though, import prices of apples rise to 0.62 in 2006 and remain on this level in 2007 (0.65) and 2008 (0.6) on average. Accordingly, the share of negative observations ( $neg.GAP_{ij}$ ) rose from 0% in 1999 to 27% in 2005. In the consequent years 2006, 2007 and 2008 almost no negative observations are observed.

The accumulation of price observations slightly above the EP increased from 1999 until 2005, particularly in the years 2003, 2004 and 2005, but decreased thereafter, and is significantly lower in the years 2006, 2007 and 2008. This is reflected in the relatively higher values of the indicator $Q^{*}_{0.05ij}$ in 1999 to 2002 (with the exception of 2000) and 2006 to 2008.

**Figure 11: Standard Import Values of EU Apple Imports from China (1997-2008, €/100 kg)**




Source: Own illustration based on European Commission (2009).

**Table 3: Distribution Measures for SIVs of Apples from China (1999-2008)**

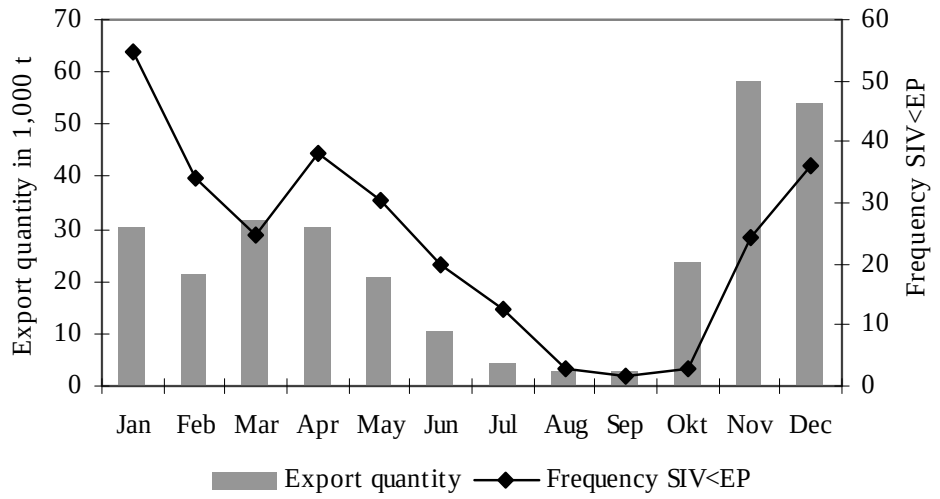
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|
| Mean of $GAP_{ijt}$ | 0.53 | 0.48 | 1.17 | 1.29 | 0.67 | 0.35 | 0.2 | 0.62 | 0.65 | 0.6 |
| $neg.GAP_{ij}$ (in %) | 0.00 | 0.10 | 0.00 | 0.00 | 0.07 | 0.12 | 0.27 | 0.00 | 0.01 | 0.00 |
| $Q^{*}_{0.05ij}$ | 2.90 | 0.70 | 2.36 | 2.31 | 0.60 | 1.03 | 0.66 | 1.75 | 2.25 | 2.81 |
| Number of obsv. | 87 | 159 | 178 | 212 | 247 | 231 | 237 | 201 | 195 | 198 |
| Share neg. obsv. < 92% of EP | 0.00 | 0.50 | 0.00 | 0.00 | 0.65 | 0.89 | 0.76 | 0.00 | 0.50 | 0.00 |

Source: Own calculations.

The decreasing average SIV level, linked with the increasing share of negative observations, as well as the declining size of the 0.05-quantile indicate that the EPS has become more relevant for Chinese apple exports to the EU in the years 2003, 2004 and 2005. This conclusion is supported by interviews with EU importers, reporting that it has become more difficult to escape tariffs for Chinese apple exports under the EPS in these years. Also, traders point out that the storage of apples until the point of time when the SIV appears to be favourable for declaring is a widespread routine. Though, from Figure 12 it becomes evident that the frequency of the event that SIV<EP is higher in month with higher EU import quantity of apples from China, though this relationship

does not hold strongly. For example, the number of SIV<EP is highest in January, whereas the import quantity is higher in November and December than in January.

**Figure 12: Monthly Distribution of China's Apple Exports to the EU and the Frequency of SIV<EP, 1999-2008**




Source: Own calculations based on European Commission (2009) and EUROSTAT (2009).

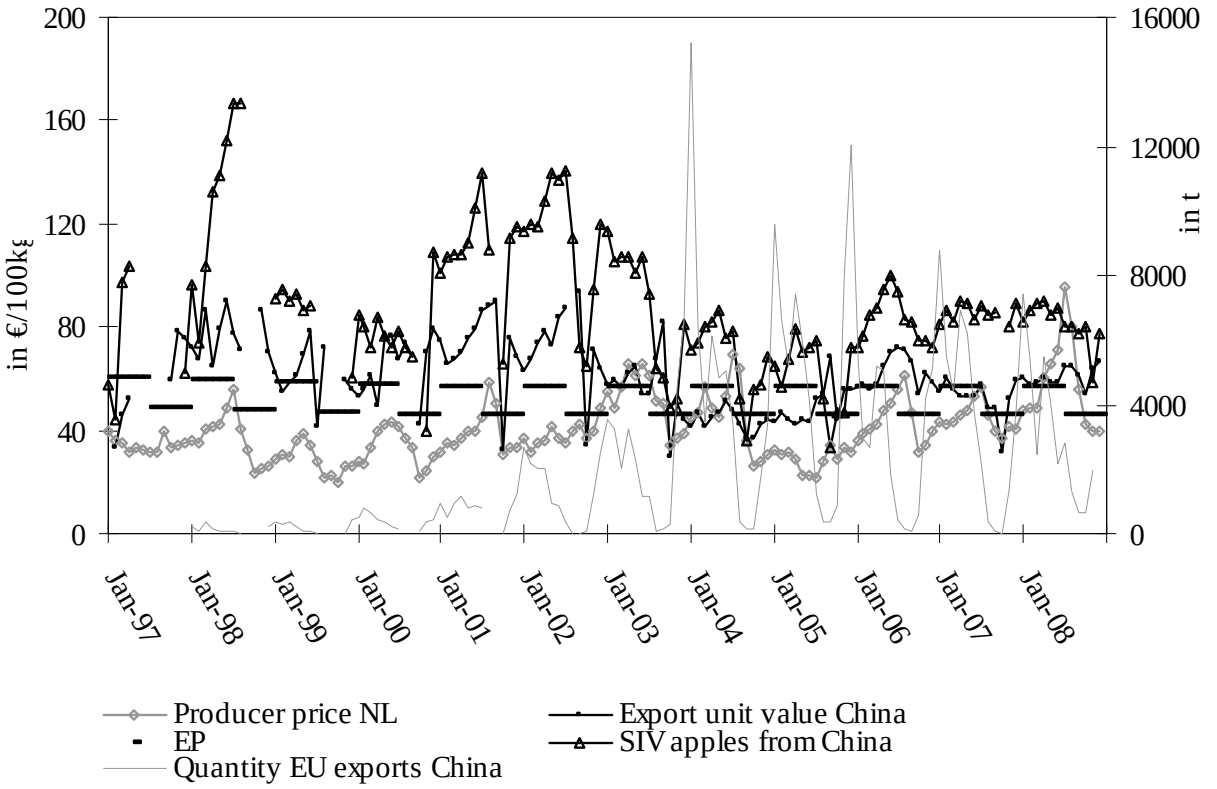
Table 3 also reports the share of observations for which the SIV is less than 92% of the EP of all observations for which the SIV is below the EP ("negative observations") which varies between 50% and 89%. In these cases, importers have to pay a specific tariff of about 40.2-50.2 €/100 kg (see Table 1), which almost double the price of Chinese apples on the EU market, if importers clear their products according to the SIV method. However, importers report that they typically wait with customs clearance until a favourable SIV applies, thus the full specific tariff (MTE) is charged rarely.

To explore reasons for the declining SIV level, Figure 13 compares the development of the SIV to the average export unit value for apples from China to the EU and to the general price level for apples in the EU, represented by Dutch producer prices. We choose the producer price in the Netherlands to represent the EU domestic price level for apples since it is the main destination of EU apple imports from China (compare Figure 4).

Figure 13 shows clearly, that the fall of the SIV was not due to an equivalent fall in domestic EU prices which were not substantially lower in 2003-2005 then in other periods. The Dutch producer price level is in most months below the EU entry price (EP) as well as the export unit value of apples in China exported to the EU. Though, the difference between the Dutch producer price and the export unit value of apples in China has decreased since 2003. It is striking that the export unit value has decreased since 2003 and remains on a lower level even in 2006, 2007 and 2008, whereas the SIV of apples originating in China is higher in 2006, 2007 and 2008 than in the years 2004 and 2005.

Figure 13 also makes evident that the quantity of EU imports of apples from China was particularly high in 2003, 2004 and 2005, when the SIV of apples from China was particularly low on average.

**Figure 13: Apple Producer Price in the Netherlands, Export Unit Value of Chinese Apples Exported to the EU (lagged by 1 period), EP, SIV of Apples from China and Quantity of China's Apple Exports to the EU** (1997-2008, €/100kg)




Sources: European Commission (2009), GTIS (2009), IMA (2009), EUROSTAT (2009).

As a conclusion, the results suggest that the strong decline of the SIV for apples originating in China on the EU market in 2003, 2004 and 2005 is not interrelated with the EU apple price.

### 5.3 Development of the Effectiveness of the EPS for Pear Exports from China to the EU

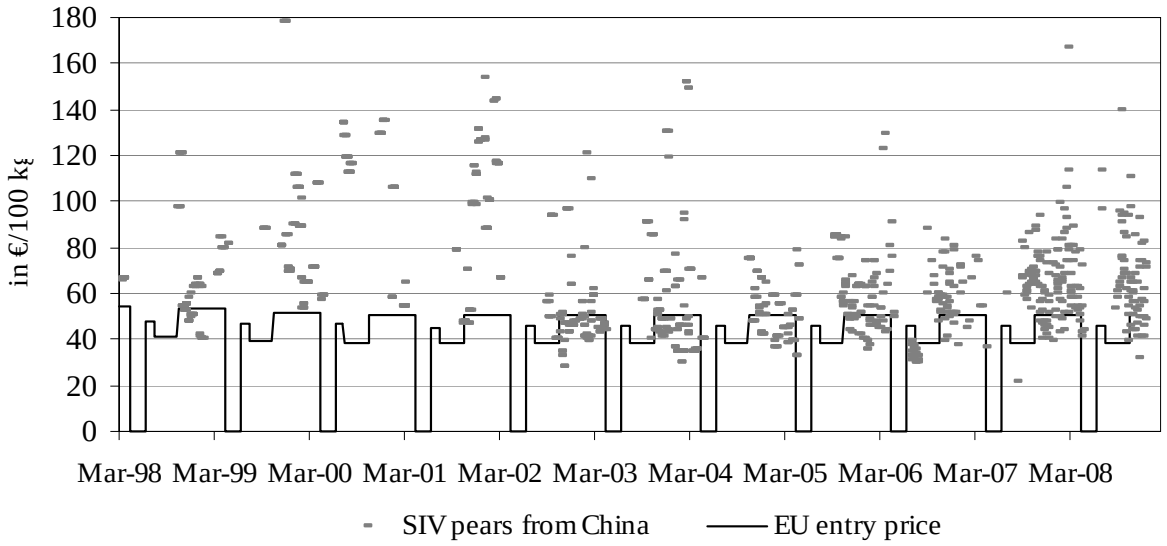
Figure 14 displays the SIVs and the EP for pears originating in China in the time period 1998 to 2008, and Table 4 displays the corresponding distribution measures for each of the years individually.

The mean of the SIV distribution for pears from China increased from 1998 to 2000, but starts declining from a level of 104% above the EP in 2000 to about 21% above the EP in 2003. The mean of the SIV distribution remains on this low level until 2006 and increases again afterwards to 43% in 2008. Accordingly, the share of negative observations ( $neg.GAP_{ij}$ ) decreased from 30% to 0% in 2000 and increased afterwards up to 53% in 2004. In the consequent years the share of

negative observations decreased again to 18% in 2008. Overall, the share of negative observations for pears is relatively higher than for apples over the whole time period underlying this analysis.

The indicator $Q^{*}_{0.05ij}$ is relatively low throughout the whole time period when compared to apples from China, though it was particularly low in the years 1998, 2001, 2003 and 2006.

**Figure 14: Standard Import Values of EU Pear Imports from China (1998-2008, €/100 kg)**




Source: European Commission (2009), own modifications.

**Table 4: Distribution Measures for SIVs of Pears from China (1998-2008)**

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean $GAP_{ijt}$ | 0.34 | 0.50 | 1.04 | 0.70 | 0.52 | 0.21 | 0.16 | 0.20 | 0.16 | 0.38 | 0.43 |
| $neg.GAP_{ij}$ (in %) | 0.30 | 0.12 | 0.00 | 0.05 | 0.29 | 0.52 | 0.53 | 0.46 | 0.40 | 0.21 | 0.18 |
| $Q^{*}_{0.05ij}$ | -0.78 | 1.39 | -0.16 | -0.87 | -0.49 | -1.61 | 0.05 | -0.43 | -1.27 | 0.72 | -0.36 |
| Number of obsv. | 53 | 64 | 95 | 65 | 99 | 120 | 108 | 116 | 99 | 80 | 142 |
| Share neg. obsv. < 92% of EP | 0.38 | 1.00 | 0.00 | 1 | 0.86 | 0.56 | 0.79 | 0.72 | 0.78 | 0.76 | 0.6 |

Source: Own calculations.

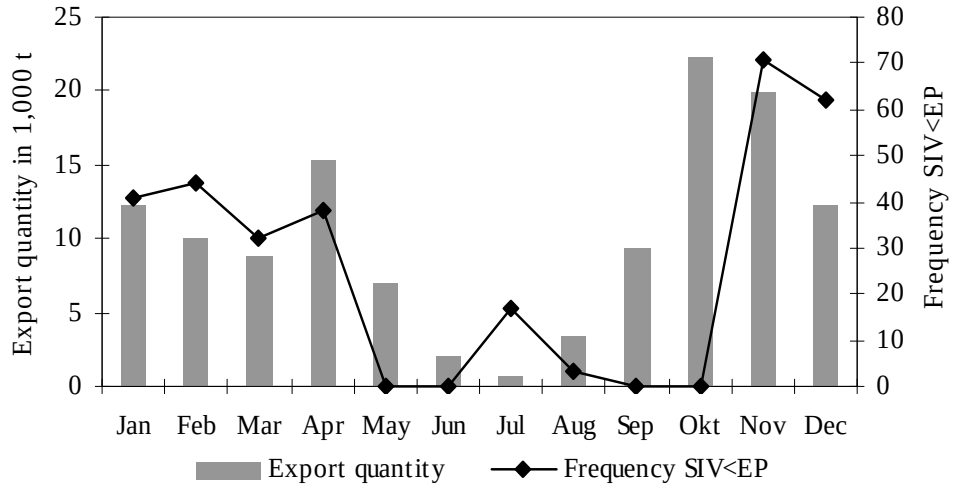
In conclusion, the relatively low value of the indicator $Q^{*}_{0.05ij}$ during the whole time period underlying this analysis (with exceptions in single years) makes evident that the EPS is of higher relevance for pears than for apples. In addition, the decreasing average SIV level and the increasing share of negative observations, suggest that the relevance of the EPS was highest in 2004, 2005 and 2006.

The share of observations for which the SIV is lower than 92% of the EP in the total number of observations for which the SIV is below the EP varies between 38% and 100% in this time period.

Figure 15 makes evident that there is some relationship between the size of China's pear exports to the EU and the frequency of the event that the SIV is below the EP, though this does not hold strictly, as was shown before for apples. For example, the pear imports are highest in October, though the event that the SIV is below the EP such that a specific tariff has to be paid is not observed in this month in the time period 1998-2008. This confirms the widespread traders' routine of storing pears and to declare them to the customs not until the SIV is favourable.

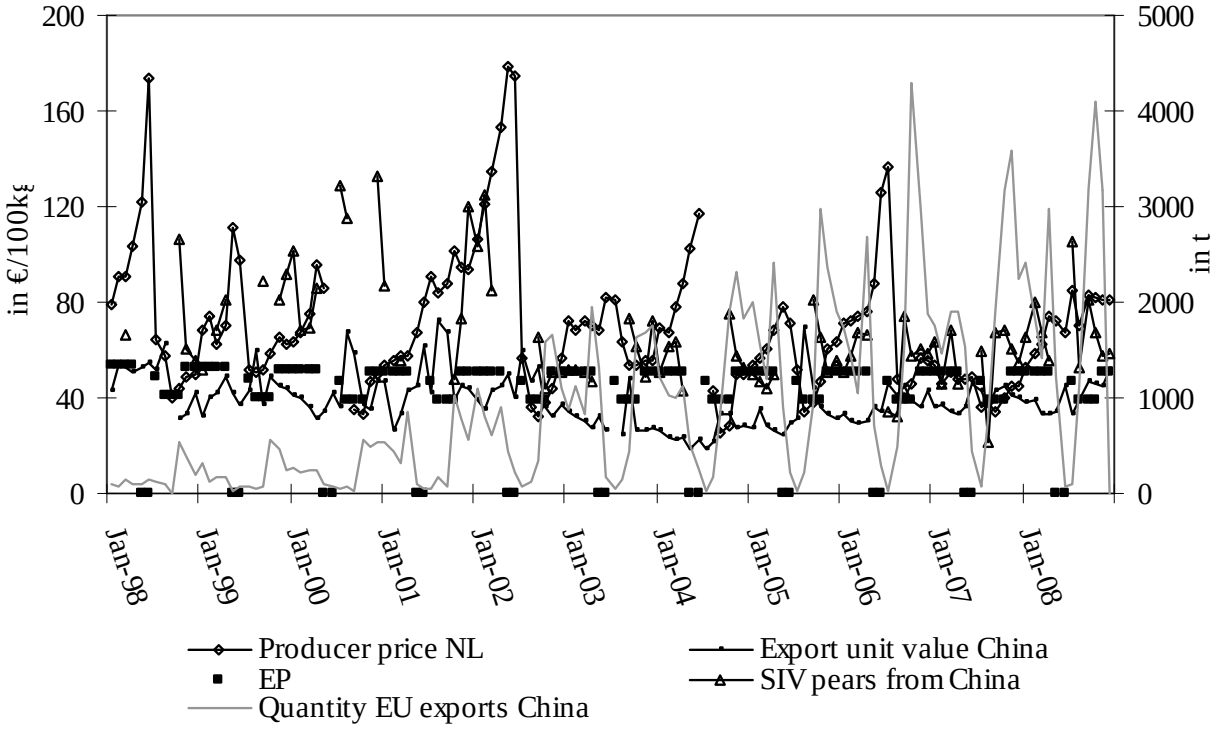
To investigate the reasons for the declining SIV level, Figure 16 compares the development of the SIVs to the Chinese export unit values of exports to the EU and the Dutch grower prices for pears. In contrast to apples, data suggest that the fall in the Chinese SIV from 2003 on may partially be caused by the fall of the domestic EU price, which fell as well. In addition, and also in contrast to apples, it becomes evident that the export unit value is lower than the Dutch producer price as well as the EU entry price during the whole time period underlying this analysis. Also, the export unit value is particularly low in the time period 2003-2006. This suggests that the production of pears in China is highly competitive. Therefore, pears originating from China can be supplied to the EU market at relatively low prices and thus the effectiveness of the EPS is high.

**Figure 15: Monthly Distribution of China's Pear Exports to the EU and Frequency of SIV<EP, 1998-2008**




Sources: Own calculations based on European Commission (2009) and EUROSTAT (2009).

**Figure 16: Pear Producer Price in the Netherlands, Export Unit Value of Pears from China to the EU (lagged by 1 period), EU EP, SIV of Pears from China and Quantity of China's Pear Exports to the EU** (1998-2008)




Sources: European Commission (2009), GTIS (2009), IMA (2009).

## 6 Conclusions and Outlook

The results of our analysis suggest that the high effectiveness of the EPS for apples originating in China limits to the years 2003, 2004 and 2005. For pears originating in China our results indicate that the EPS is relevant throughout the whole period underlying this analysis, with the highest relevance prevailing in 2004, 2005 and 2006.

This contrasts with exports from all other relevant exporters of apples (New Zealand, South Africa, Chile, Brazil, Argentina) and pears (Argentina, Chile, South Africa) to the EU, which exclusively fall into clusters 3 and 4 (see Figure 6), for which the EPS is of low relevance. Thus, China is the only country which is distant to the EU market and for which the EPS is highly relevant for apples and pears.

How can the relevance of the EPS for apples (2003-2005) and pear exports from China to the EU be explained, compared to the low relevance of the EPS for the other main exporters?

First, China is a northern hemisphere supplier thus supplying to the EU during the EU harvest season, whereas the southern hemisphere suppliers as e.g. New Zealand, South Africa, Chile are supplying countercyclical to the EU harvest season. Therefore, China directly competes with EU

producers and thus supplying produce to the EU market at low prices is essential for China's success.

Also, transportation costs are relatively low. According to traders, shipping a 20-ton container of apples from China to the EU costs about 2500 €. In contrast, shipping such a container from Chile to the EU costs about 4500 €. This results in a significant price difference, equivalent to about 17% of the average Chinese SIVs for apples and pears in 2005.

How can the declining SIV of Chinese apples on the EU market in 2003, 2004 and 2005 be explained? Traders do not report a decline in transportation costs. However, market experts point out that Chinese exporters aimed to increase their share in the EU apple market by offering apples to the EU market at lower prices. In addition, EU consumers' demand for apples from China, which are of the kind "Fuji" and which are quite different in taste to apple varieties generally offered in the EU market, was far below traders' expectations, which was a further factor contributing to a decreasing price level. Traders report that the low prices for apples from China in the EU market together and the additional payment of specific tariffs have resulted in massive losses for trading companies in the Netherlands and in China, some of these even going bankrupt. Following this low-pricing marketing strategy was facilitated by the real devaluation of the Yuan vis-à-vis the Euro in the time period 2001 and 2005.

This also explains the sharp decline of the export of apples from China to the EU in 2006, and the relatively lower level of EU exports in China's total apple exports in the aftermath.

The relatively low export unit values for pears suggest that the production of pears in China is highly competitive and that production costs are low.

Based on our results we expect that the liberalization of trade of apples and pears between the EU and China would have minor effects for apples, but might have larger effects for pears.

The future development of Chinese apple and pear exports to the EU depends strongly on domestic market conditions in China. Though Chinese net exports of apples and pears as a share of total domestic production has increased, its level still amounts no more than 5.1% and 4.5% in the marketing year 2008/2009, respectively (USDA, 2009). Thus, small relative changes in the Chinese consumption pattern could affect exports significantly. In fact, Lardy (2007) shows that the strong GDP growth rates in China - about 10% over the last three decades - have translated into household consumption only to a limited extent due to high investment and private saving rates. If the share of disposable income in the Chinese GDP increases, this may induce much higher domestic consumption of fresh fruits and vegetables and thus reduce the export potential. Such a development would make the EPS less relevant in protecting the EU market.

Finally, a potential conclusion of the Doha Round might result in significant tariff reduction rates that would also apply to the specific tariffs which are part of the EPS. In implementing the results of the Uruguay Round, the EU reduced entry prices by the same monetary amount as specific tariffs - an approach that could be repeated in the Doha Round and would thus diminish the relevance of the EPS (Grethe, 2005: 28-29).

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